Haulotte GROUP

CE

OPERATING AND MAINTENANCE INSTRUCTIONS

SELF-PROPELLED LIFT
HA16X

242 032 2530 - E 01.07 GB

Registered Quality System ISO 9001 V2000 Haulotte GROUP CERTIFIED COMPANY

WWW.HAULOTTE.COM

Haulotte GROUP

Pinguely-Haulotte - La Péronnière - BP 9 - 42152 l'Horme - France - Tel : +33 (0)4 77 29 24 24 - Fax : +33 (0)4 77 29 43 95 - email : haulotte@haulotte.com

Distribué par / *Distributed by/ Distribuito da*

Haulotte France
Tél / *Phone* +33 (0)4 72 88 05 70
Fax / *Fax* *+33 (*0)4 72 88 01 43

Centre Mondial Pièces de Rechange
Spare Parts International Centre
Tél / *Phone* +33 (0)4 77 29 24 51
Fax / *Fax* *+33 (*0)4 77 29 98 88

Haulotte Hubarbeitsbühnen
Tél / *Phone* + 49 76 33 806 920
Fax / *Fax* + 49 76 33 806 82 18

Haulotte Portugal
Tél / *Phone* + 351 21 955 98 10
Fax / *Fax* + 351 21 995 98 19

Haulotte UK
Tél / *Phone* + 44 (0) 1952 292753
Fax / *Fax* + 44 (0) 1952 292758

Haulotte U.S. Inc.
Main tool free 1-877-HAULOTTE
Service tool free *1*-877-HAULOT-S

Haulotte Singapore Pte Ltd
Tél / *Phone* + 65 6536 3989
Fax / *Fax* + 65 6536 3969

Haulotte Netherlands BV
Tél / *Phone* + 31 162 670 707
Fax / *Fax* + 31 162 670 710

Haulotte Australia PTY Ltd
Tél / *Phone* + 61 3 9706 6787
Fax / *Fax* + 61 3 9706 6797

Haulotte Italia
Tél / *Phone* + 39 05 17 80 813
Fax / *Fax* + 39 05 16 05 33 28

Haulotte Do Brazil
Tél / *Phone* + 55 11 3026 9177
Fax / *Fax* + 55 3026 9178

Haulotte Scandinavia AB u.b.
Tél / *Phone* + 46 31 744 32 90
Fax / *Fax* + 46 31 744 32 99

Haulotte Iberica - Madrid
Tél / *Phone* + 34 91 656 97 77
Fax / *Fax* + 34 91 656 97 81

Haulotte Iberica - Sevilla
Tél / *Phone* + 34 95 493 44 75
Fax / *Fax* + 34 95 463 69 44

GENERAL

You have just taken delivery of your mobile elevating work platform

It will give you complete satisfaction if you follow the operating and maintenance instructions exactly.

The purpose of this instruction manual is to help you in this.

We stress the importance:

- of complying with the safety instructions relating to the machine itself, its use and its environment,
- of using it within the limits of its performances,
- of proper maintenance upon which its service life depends.

During and beyond the warranty period, our After-Sales Department is at your disposal for any service you might need.

Contact in this case our Local Agent or our Factory After-Sales Department, specifying the exact type of machine and its serial number.

When ordering consumables or spares, use this documentation, together with the «Spares» catalogue so as to receive original parts, the only guarantee of interchangeability and perfect operation.

This manual is supplied with the machine and is included on the delivery note.

REMINDER: You are reminded that our machines comply with the provisions of the «Machines Directive» 89/392/EEC of June 14th 1989 as amended by the directives 91/368/EEC of June 21st 1991, 93/44/EEC of June 14th 1993, 93/68/EEC of July 22nd 1993 and 89/336/EEC of May 3rd 1989, directive 2000/14/CE and directive EMC/89/336/CE.

Caution!

The technical data contained in this manual cannot involve our responsibility and we reserve the right to proceed with improvements or modifications without amending this manual.

Why use only Haulotte original spare-parts ?

1. RECALLING THE EEC DECLARATION OF CONFORMITY IN QUESTION

Components, substitutions, or modifications other than the ones recommended by **Haulotte** may recall in question the initial security conditions of our **Haulotte** equipment. The person who would have intervened for any operation of this kind will take responsibility and recall in question the EEC marking validity granted by **Haulotte**. The EEC declaration will become null and void and **Haulotte** will disclaim regulation responsibility.

2. END OF THE WARRANTY

The contractual warranty offered by **Haulotte** for its equipment will no longer be applied after spare-parts other than original ones are used.

3. PUBLIC AND PENAL LIABILITY

The manufacture and unfair competition of fake spare-parts will be sentenced by public and penal law. The usage of fake spare-parts will invoke the civil and penal liability of the manufacturer, of the retailer, and, in some cases, of the person who used the fake spare-parts.
Unfair competition invokes the civil liability of the manufacturer and the retailer of a “slavish copy” which, taking unjustified advantage of this operation, distorts the normal rules of competition and creates a “parasitism” act by diverting efforts of design, perfection, research of best suitability, and the know-how of **Haulotte**.

FOR YOUR SECURITY, REQUIRE HAULOTTE ORIGINAL SPARE-PARTS

4. QUALITY

Using **Haulotte** original spare-parts means guarantee of :

- High quality partsl
- The latest technological evolution
- Perfect security
- Peak performance
- The best service life of your **Haulotte** equipment
- The **Haulotte** warranty
- **Haulotte** technicians' and repair agents' technical support

5. AVAILABILITY

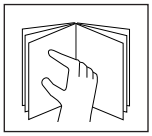
Using Haulotte original spare-parts allows you to take advantage of 40 000 references available in our permanent stock and a 98% service rate.

WHY NOT TAKE ADVANTAGE ?

CONTENTS

1 - GENERAL RECOMMENDATIONS - SAFETY

1.1 - GENERAL WARNING



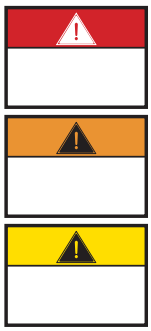
1.1.1 - Manual

This manual is designed to familiarise the operator with HAULOTTE self-propelled platforms in order to ensure efficient and safe use. However, it cannot replace the basic training required by any user of site equipment.

The site manager is bound to inform the operators of the instructions contained in the manual. He is also responsible for applying the «user regulations» in force in the country of use.

Before using the machine, it is essential to understand all these instructions in order to ensure safe and efficient operation.

This manual must be kept available for all operators. Additional copies can be supplied by the manufacturer on request



1.1.2 - Labels

Potential dangers and machine instructions are indicated on labels and plates. All instructions on such plates must be read.

All labels conform to the following colour code:

- Red indicates a potentially fatal danger.
- Orange indicates a danger of causing serious injury.
- Yellow indicates a danger that may cause material damage or slight injury.

The site manager must ensure that these labels are in good condition and remain legible. Additional copies can be supplied by the manufacturer on request.

1.1.3 - Safety

Ensure that any persons entrusted with the machine are fit to meet the safety requirements that its use imposes.

Avoid any working method that may jeopardise safety. Any use not compliant with the instructions may cause risk and damage to persons and property.

Caution !

To attract the reader's attention instructions are signalled by this sign.

This manual must be kept by the user throughout the machine's service life, including in the case of loan, lease and resale.

Ensure that all plates or labels relative to safety and hazards are complete and legible.

1.2 - GENERAL SAFETY INSTRUCTIONS

1.2.1 - Operators

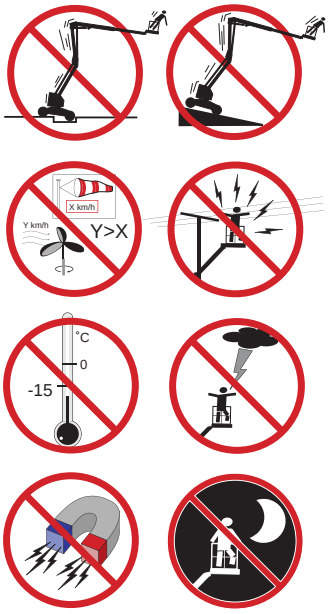
Operators must be aged over 18, and hold an operating license in the country of use issued by their appropriate autority to prove that they are apt to operate the machine.

Caution !
Only trained operators can use Haulotte self-propelled platforms.

There must always be one person at ground level who is familiar with the emergency control to:

- Take fast action if necessary.
- Take over the controls in case of accident or malfunction.
- Monitor and prevent movement of vehicles and people near the platform.
- Guide the platform operator if required.

1.2.2 - Work environment



Never use the machine:

- On ground that is soft, unstable, congested.
- On ground that has a slope greater than permissible limit.
- In winds greater than the permissible limit. If used outside, use an anemometer to ensure that the wind speed does not exceed the permissible limit (see Chap 1.7, page 6).
- Near power lines (check minimum safe approach distances according to voltage carried) (see Chap 1.8, page 7).
- In temperatures less than -15°C (especially in refrigerated chambers). Consult us if it is necessary to work below -15°C.
- In explosive atmospheres.
- In poorly-ventilated areas, since the exhaust fumes are toxic.
- During storms (risk of lightning).
- In the dark, unless the optional floodlight is fitted.
- In the presence of intense electromagnetic fields (radar, moving and high currents).

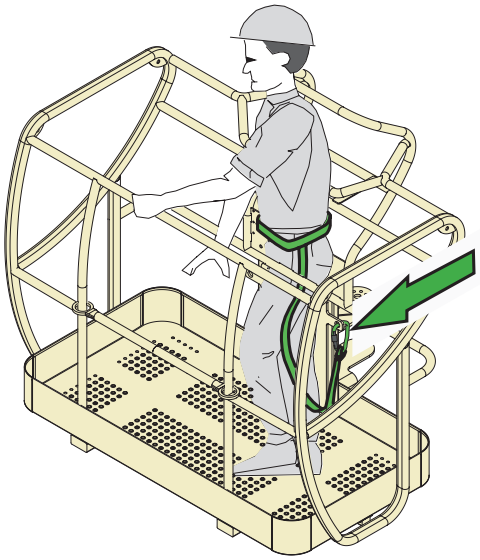
DRIVING ON PUBLIC ROADS IS PROHIBITED.

1.2.3 - Using the machine

In normal service (i.e. operating from the platform), the platform/turntable control select key must be removed and kept at ground level by a person who is present and trained in rescue/emergency assistance manoeuvres.

Do not use the machine:

- with a load greater than allowed load,
- if wind speed exceeds the maximum
- with more than maximum authorised number of occupants in platform,
- with a side load in the platform greater than permissible limit.



To reduce the risks of **serious falls, operators must respect the following instructions**:

- Hold the guardrail firmly when lifting or driving the platform.
- Remove any traces of oil or grease from the platform steps, floor or guardrails.
- Wear personal protective equipment suited to working conditions and conform to local regulations, particularly when working in hazardous areas.
- Anyone working onboard the platform must wear a safety harness which should be attached to the usual fixing point with a strap. Attach one strap only per fixing point.
- Never disable the limit switches of the safety devices.
- The contact with fixed or mobile obstacles can cause the premature deterioration of the structure, and involve the rupture of certain safety members of the machine
- Do not increase the platform operating height by means of ladders or other accessories.
- Never use the guardrails to climb into or out of the platform (use the steps provided).
- Never climb on the guardrails when the platform is up.
- Avoid driving the machine at high speed in narrow or congested areas.
- Never use the machine without putting in place the platform safety bar or closing the safety gate.
- Never climb on the covers.

Caution !
Never use the platform as a crane, hoist or lift.
Never use the machine to pull or tow.
Never use the boom as a ram or thruster or to lift the wheels.

To reduce the risks of tipping over, operators **must follow these instructions**:

- Never disable the limit switches of the safety devices.
- Never move the control handles from one direction to the other without stopping in the «O» position. (To stop when travelling, gradually move the handle to «O», keeping your foot down on the pedal.).
- Do not exceed the maximum load or the number of occupants allowed in the platform.
- Spread the load and if possible place in the centre of the platform.
- Check that the ground resists the pressure and load per wheel.
- The contact with fixed or mobile obstacles can cause the premature deterioration of the structure, and involve the rupture of certain safety members of the machine
- Do not drive the platform at high speed in narrow or congested areas.
- Do not drive the platform in reverse gear (poor visibility).
- Do not use the machine with a congested platform.
- Do not use the machine with equipment or objects hanging from the guardrails or boom.
- Do not use the machine with items liable to increase the wind load (e.g. panels).
- Never carry out maintenance on the machine with the platform raised, without first installing the required safety provisions (overhead crane, crane).
- Perform the daily checks and monitor the machine's good working order during periods of use.
- Protect the machine from any uncontrolled intervention when it is not in operation.

NOTE : Do not tow the unit. (The equipement is not designed for towing. Transport of the unit should be carried out using a vehicle built for this purpose).

1.3 - RESIDUAL RISKS

1.3.1 - Risks of jerky movements and tipping over

Caution !

The direction of travel can be reversed after a 180° turntable rotation. Take account of the colour of the arrows on the chassis compared with the direction of travel (green = forward, red = reverse)

Thus, moving the manipulator in the direction of the green arrow on the control panel will move the machine according to the direction indicated by the green arrow on the chassis. Similarly, moving a manipulator in the direction of the red arrow on the control panel, will move the machine in the direction of the red arrow on the chassis

Risks of jerky movement and tipping over are high in the following situations:

- Sudden action on the controls.
- Overloading of the platform.
- Uneven ground (Be careful during thaw periods in winter).
- Gusts of wind.
- Contact with an obstacle on the ground or at a height.
- Working on platforms, pavements, etc.

Allow sufficient stopping distances:

- 3 meters at high speed,
- 1 meter at low speed.

Allow sufficient stopping distances: 3 metres at high speed and 1 metre at low speed.

Do not alter or override any components connected in any way to the machine's safety or stability.

Do not place or fasten a load so that it overhangs the machine's parts.

Do not touch adjacent structures with the elevator arm.

1.3.2 - Electrical risk

Caution !

If the machine has a 220 V 16A max. plug, the extension must be connected to a mains socket protected by a 30 mA differential circuit breaker.

Electrical risks are high in the following situations:

- Contact with a live line (check safety distances before operation near electricity lines) (see Chap 1.8, page 7).
- Use during storms.

1.3.3 - Risk of explosion or burning

The risks of explosion or burning are high in the following situations:

- Working in explosive or inflammable atmosphere.
- Filling the fuel tank near naked flames.
- Contact with the hot parts of the motor.
- Use of a machine causes hydraulic leakage.

1.3.4 - Risks of collision

- Risk of crushing people in the machine operation zone (when travelling or manoeuvring equipment).
- The operator must assess the risks above him before using the machine.
- Pay attention to the position of the arms during turntable rotation.
- Adapt movement speed to conditions related to the ground, traffic, slope and movement of people, or any other factor that may cause a collision.
- When driving down the ramp of a truck, ensure sufficient space is available for safe unloading.
- Check brake pad wear regularly to avoid all risk of collision.
- Always use a winch line connected to the unit when loading and unloading off tilt tray vehicules.

1.4 - INSPECTIONS

Comply with the national regulations in force in the country of machine use.

For AUSTRALIA: ie.AS2550.10.

For FRANCE: Order dated 1st March 2004 + circular DRT 93 dated 22 September 1993 which specify:

1.4.1 - Periodic inspections

The machine must be inspected every 6 months in order to detect any defects liable to cause an accident.

These inspections are performed by an organisation or personnel specially designated by the site manager and under his responsibility (whether or not they belong to the company) Articles R 233-5 and R 233-11 of the French Labour Code.

The results of these inspections are recorded in a safety register kept by the site manager and constantly available to the labour inspector and the site safety committee (if one exists) and the list of specially designated personnel (Article R 233-5 of the French Labour Code).

Moreover, before each use, check the following:

- the operator's manual is in the storage compartment on the platform,
- the stickers are placed according to the section concerning «Labels and their positions»,
- oil level and any elements in the maintenance operation table
- look out for any damaged, incorrectly installed, modified or missing parts.

NOTE : This register can be obtained from trade organisations, and in some cases from the OPPBTP or private prevention agencies.

The designated persons must be experienced in risk prevention (Articles R 233-11 or order n° 93-41).

No member of personnel is allowed to perform any check whatsoever during machine operation (Article R 233-11 of the French Labour Code).

1.4.2 - Examination of machine suitability

The manager of the site where the machine is operated must ensure the machine is suitable, i.e. capable of performing the work in complete safety, and in compliance with the operating manual. Furthermore, the French order of 1st March 2004 addresses problems relative to leasing, examination of the state of conservation, checking upon operation after repairs, and test conditions (static test coefficient 1.25; dynamic test coefficient 1.1). All users must consult this order's requirements and comply with them.

1.4.3 - State of conservation

Detect any deterioration liable to cause hazardous situations (concerning safety devices, load limiters, tilt sensor, cylinder leaks, deformation, welds, bolt tightness, hoses, electrical connections, tyre state, excessive mechanical gaps).

NOTE : If the machine is rented/leased, the user responsible for the machine must examine its state of conservation and suitability. He must obtain assurance from the leaser that general periodic inspections and pre-operation inspections have been performed.

1.5 - REPAIRS AND ADJUSTMENTS

These cover major repairs, and work on or adjustments to safety systems or devices (of a mechanical, hydraulic or electrical nature).

These must be performed by personnel from or working for PINGUELY-HAULOTTE who will use only original parts.

Any modification not controlled by PINGUELY-HAULOTTE is unauthorised.

The manufacturer cannot be held responsible if non-original parts are used or if the work specified above is not performed by PINGUELY-HAULOTTE-approved personnel.

1.6 - VERIFICATIONS WHEN RETURNING TO SERVICE

To be performed after:

- extensive disassembly-reassembly operation,
- repair affecting the essential components of the machine,
- any accident caused by the failure of an essential component.

It is necessary to perform a suitability examination, a state of conservation examination, a static test, a dynamic test (see coefficient in paragraph (see Chap 1.4.2, page 5).

Caution !
These test must be performed by a competent person.

1.7 - BEAUFORT SCALE

The Beaufort Scale of wind force is accepted internationally and is used when communicating weather conditions. It consists of number 0 - 17, each representing a certain strength or velocity of wind at 10m (33 ft) above ground level in the open.

Description of Wind		Specifications for use on land	MPH	m/s
0	Calm	Calm; smoke rises vertically	0-1	0-0.2
1	Light Air	Direction of wind shown by smoke	1-5	0.3-1.5
2	Light Breeze	Wind felt on face; leaves rustle; ordinary vanes moved by wind	6-11	1.6-3.3
3	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag	12-19	3.4-5.4
4	Moderate Breeze	Raises dust and loose paper; small Branches are moved	20-28	5.5-7.9
5	Fresh Breeze	Small trees in leaf begin to sway; crested wavelets form on inland waterways	29-38	8.0-10.7
6	Strong Breeze	Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty	39-49	10.8-13.8
7	Near Gale	Whole trees in motion; inconvenience felt when walking against wind	50-61	13.9-17.1
8	Gale	Breaks twigs off trees; generally impedes progress	62-74	17.2-20.7
9	Strong Gale	Slight structural damage occurs (chimney pots and slates removed)	75-88	20.8-24.4

1.8 - MINIMAL DISTANCES OF SAFETY

- It is important to hold the machine far away from the lines and equipment of electrical current according to the applicable governmental réglements and the following diagram

Voltage	distance minimum safety in meters
from 0 to 300 V	Avoid contact
from 300 V to 50 kV	3.05
from 50 kV to 200 kV	4.60
from 200 kV to 350 kV	6.10
from 350 kV to 500 kV	7.62
from 500 kV to 750 kV	10.67
from 750 kV to 1000 kV	13.72

2 - PRESENTATION

The self-propelled plaform, model HA16X, is designed for all overhead work within the limits of its characteristics (Chap 2.4 -, “Technical characteristics”, page 10) and in compliance with all the safety instructions specific to the equipment and places of use.

The main control station is on the platform.

The control station on the turntable is for emergency or stand-by operations.

2.1 - IDENTIFICATION

A plate on the chassis is engraved with all machine identification information.

Fig. 1 - Manufacturer’s plate

Haulotte GROUP

PINGUELY HAULOTTE, La Péronnière, BP9
42152 L'Horme - France

CE

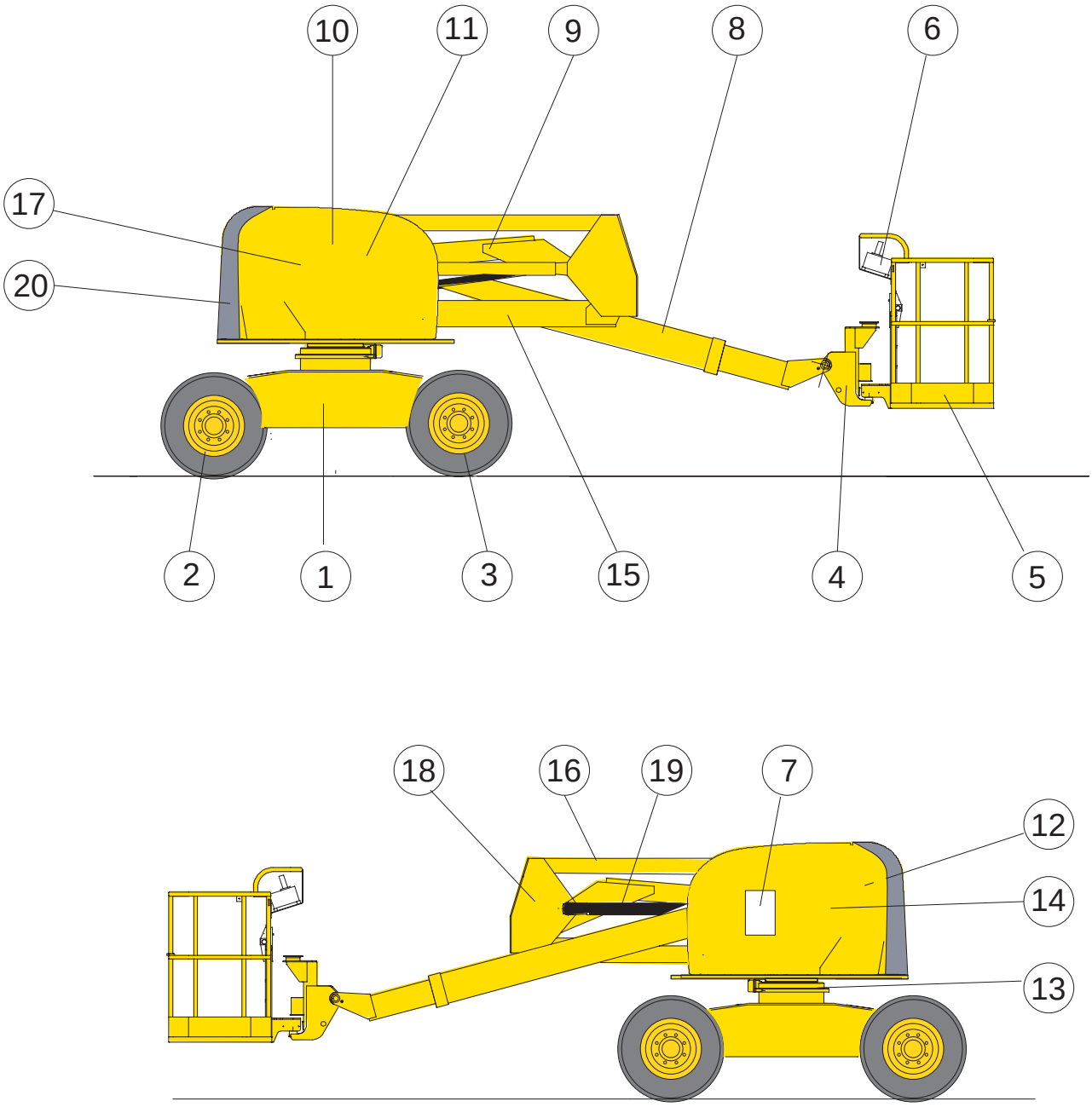
EQUIPMENT	
TYPE	
SERIAL N°	
TOTAL WEIGHT	kg
YEAR OF MANUFACTURE	
NOMINAL POWER	kW
MAXIMUM LOAD	kg
NUMBER OF PERSONS + LOAD	P + kg
LATERAL FORCE MAX.	N
WINDSPEED MAX.	m/s
SLOPE OPERATION MAX.	degres
GRADEABILITY	%

307P218080 b

REMINDER: When requesting information, intervention or spare parts, please specify the type and serial number of the machine.

2.2 - MAIN COMPONENTS

Fig. 2 - Main components

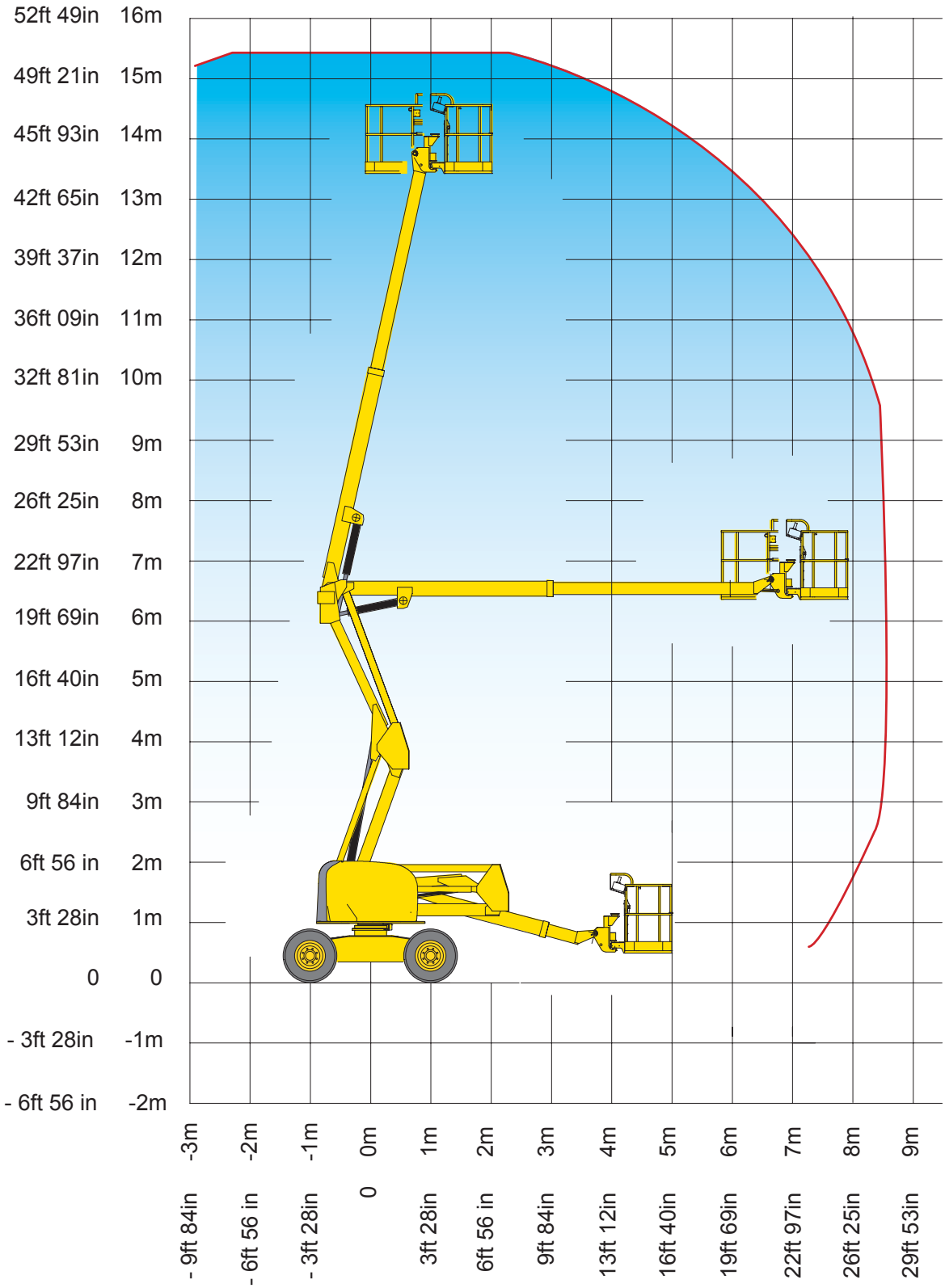


1- Mobile chassis	11- Cover
2- Drive and steering wheels	12- Boom support
3- Drive wheels	13- Slew ring
4- Platform support with load limiter	14- Diesel and hydraulic tank compartment
5- Platform	15- Bottom arm
6- Platform control panel	16- Top tie rod
7- Turntable control panel	17- Ignition motor+pump+battery compartment
8- Two-part boom	18- Link part
9- Top arm	19- Bottom tie rod
10- Turntable	20- Counter-weight

2.3 - WORK AREA

2.3.1 - HA16X work area

Fig. 3 - I HA16X work area



2.4 - TECHNICAL CHARACTERISTICS

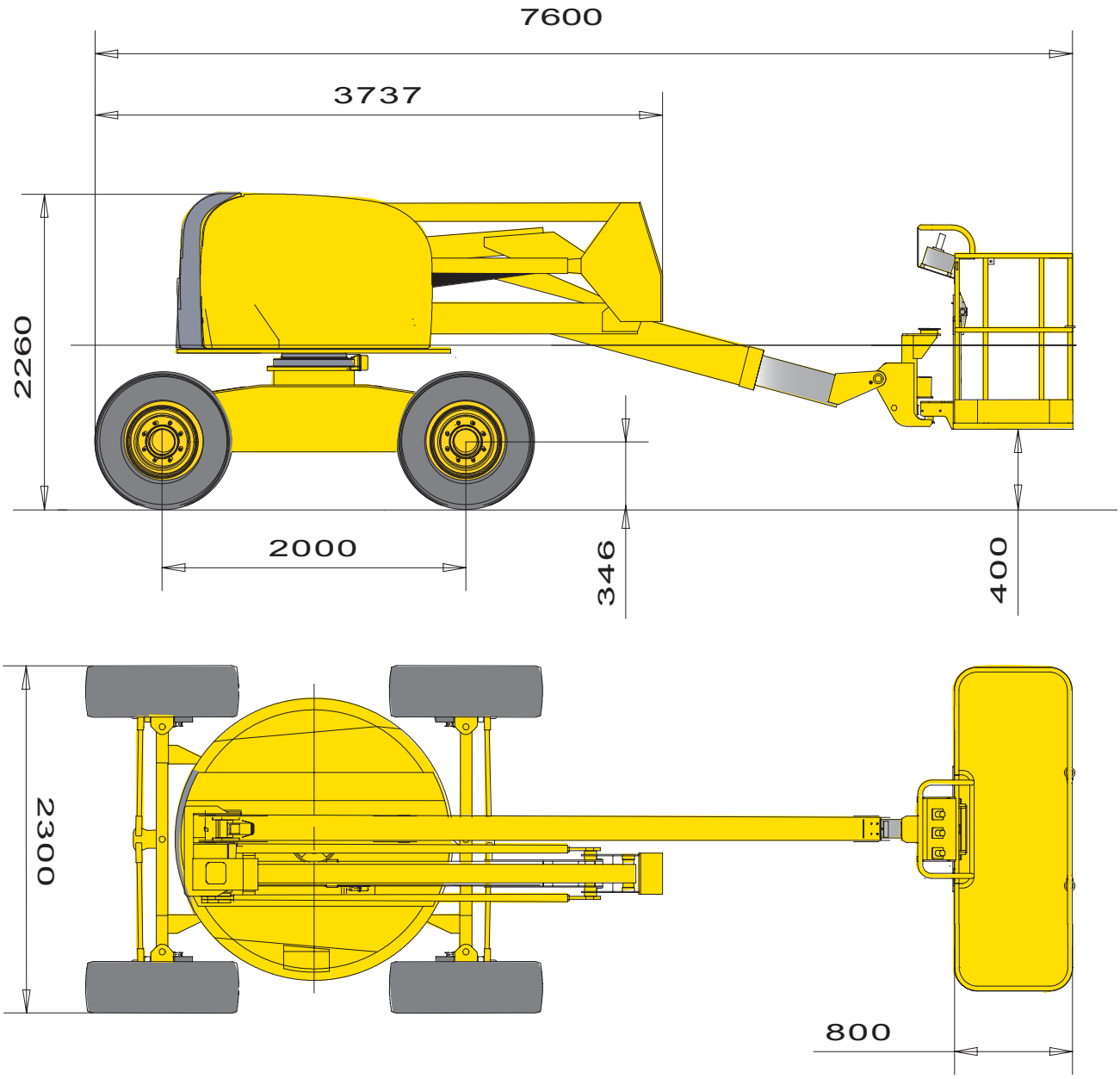
2.4.1 - H15X technical characteristics

DESCRIPTION	HA16X		Unit
	Standard basket 1800x800	Basket option 2300x800	
Load	230	230	Kg
Maximum lateral manual force	400	400	N
Maximum wind speed	45	45	Km/h
Overall length of the platform in its idle position	7.60		m
Overall length of the platform in its transport position	6.70		m
Height under the floor with the basket in the idle position	0.40		m
Height under the floor with the basket in the work position	0.65		m
Overall platform width	2.26		m
Overall platform height	2.08		m
Floor clearance at chassis edge	0.35		m
Basket floor clearance in the idle position	0.37		m
Basket floor clearance in the transport position	0.37		m
Platform height in the transport position	2.26		m
Platform height in the idle position	2.26		m
Platform width at tyre level	2.25		m
Maximum height of floor raising	13.45		m
Maximum height of floor lowering	0.37		m
Maximum height of joint	6.75		m
Maximum reach of basket above the ground	7.35		m
Turntable rotation angle	350		°
Positive boom displacement	76		°
Negative boom displacement	18		°
Overall basket length	1.80		m
Overall basket width	0.80		m
Overal height of the basket, platform	1.10		m
Basket rotation angle	-90° /+ 90°		°
External steering radius	9.30		m
Internal steering radius	3.55		m
Tyre width	0.34		m
Lateral wheelbase	2.00		m
Tyre diameter	0.89		m
Maximum slope in travel	50		%
Authorised tilt	5		°
Hydraulic tank	100		l
Fuel tank	55		l
Total weight	6950		Kg
Differential blocking	yes		
Hydraulic brakes	2		
Freewheel	yes		

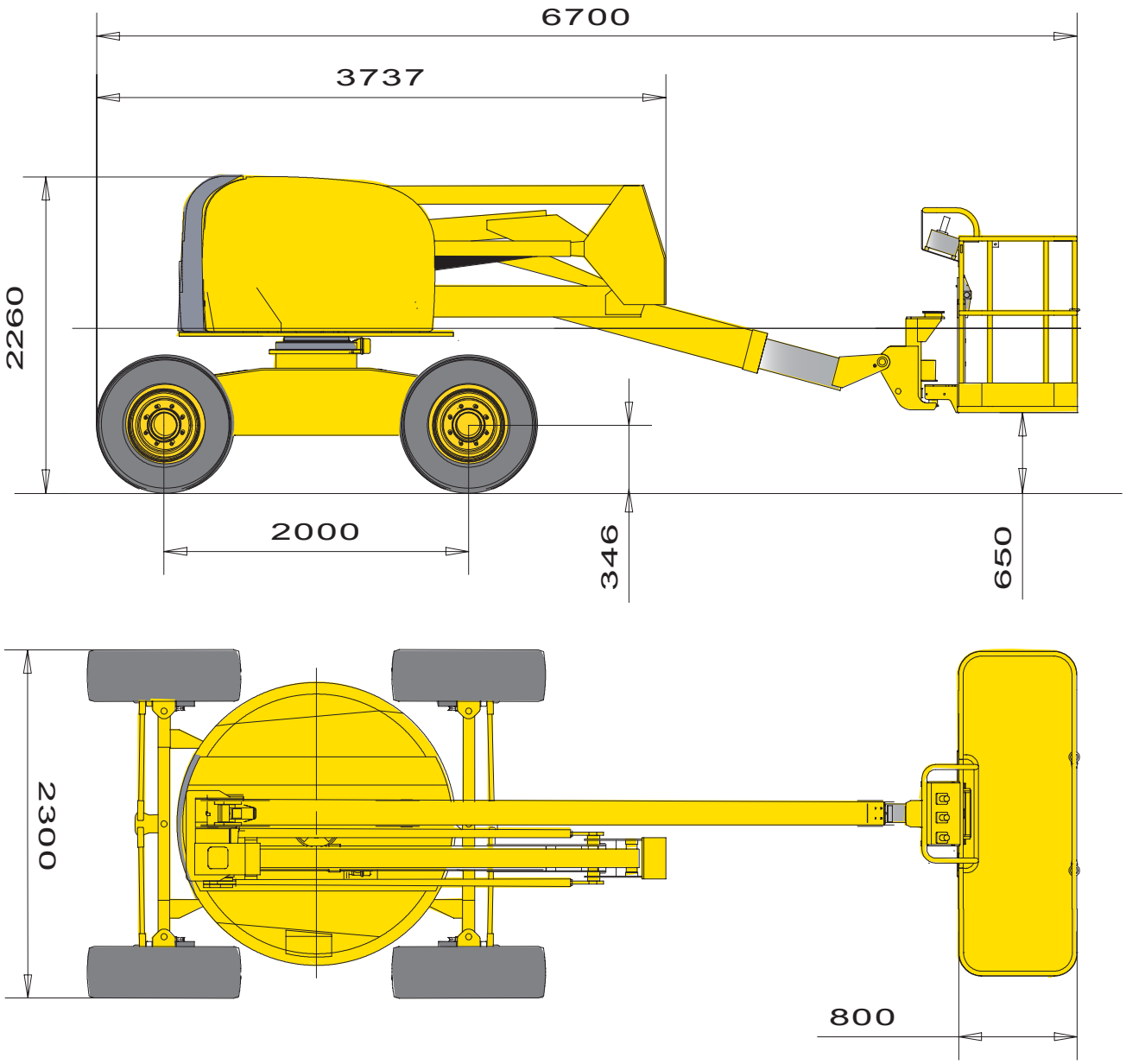
DESCRIPTION	HA16X	Unit
Motor DEUTZ - Power - Power at low speed - Consumption	F3L1011F 38CH/28.33hp/28Kw at 2400 rpm 20.4 CH/15.21 hp/15Kw at 1250 rpm 2309 Kwh	
Travel speed - low speed - high speed	 0.42 1.66	m/s
Maximum force on one wheel	3220	Kg
Hydraulic pressure - General - Travel - Steering - Slewing	 24 24 24 10	MPa
Maximum pressure on the ground - hard ground (concrete) - soft ground (loose earth)	 10 3	daN/cm²
Ignition battery	12V-95Ah-450A	
Supply voltage	12	V
Accoustic power	107	dB
Sound level at 10 metres	75	dB

2.5 - SIZE

2.5.1 - Size of the HA16X in the idle position



2.5.2 - Size of the HA16X in the transport position

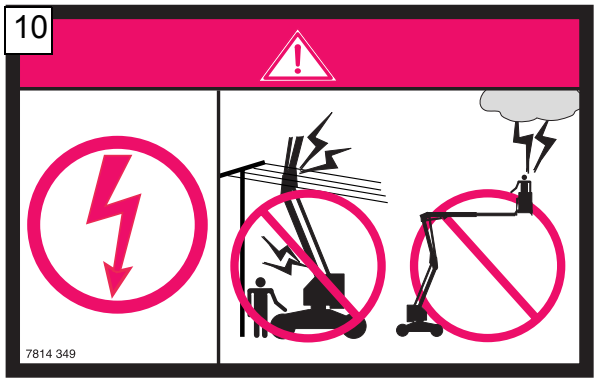


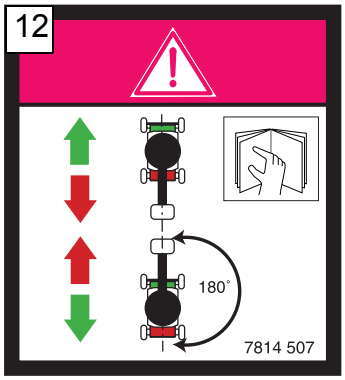
2.6 - LABELS

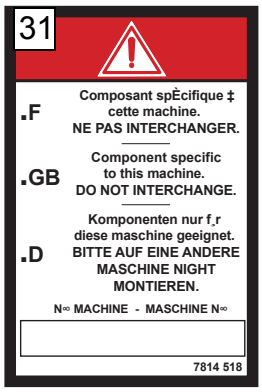
2.6.1 - Label references

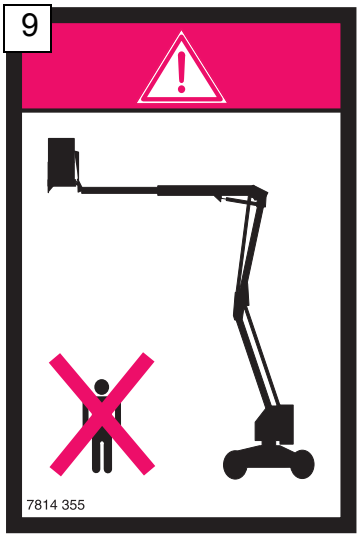
Ref	Code	Qty	Description
2	307P218230	1	HA16X logo
5	307P200530a	2	HA16X floor height and load
7	3078143420	1	Operation manual - French
8	307P218080	1	Manufacturer's plate
9	3078143550	2	Do not park in the work area
10	3078143490	1	Danger of electrocution
11	3078143520	1	Hydraulic oil
12	3078145070	1	Danger travel direction
13	3078143590	1	Oil level
17	3078143640	1	Do not stand on the cover
19	3078143600	2	Do not use as an earth
20	3078143540a	1	220V plug
21	3078143680b	1	Read instruction manual
30	2420505950	1	Warranty activation
31	3078145180	1	Do not exchange
41	3078143570	1	Slew ring lubrication
42	3078143530	1	Remove the pin
44	3078143630	2	Danger of body crush
48	3078143930	1	Green arrow
49	3078143940	1	Red arrow
50	307P217770	2	Haulotte logo
14	3078143620	2	Danger of hand crush
51	307P202240	1	Accoustic power
11	3078148890	1	Organic oil option
24	307P217960	1	Platform control panel label
23	307P217970	1	Turntable control panel label
29	3078145730	1	220V plug for Holland
40	2421808660	1	Yellow and black reflective adhesive marking
7	3078144560	1	Diesel operation manual for Australia
10	3078144430	1	Danger of electrocution for Australia
33	3078144490	4	Sling load capacity for Australia
34	3078144510	1	Fuel tank filling for Australia
52	3078144530	1	Emergency operation for Australia
53	3078144520	2	Harness load for Australia
56	3078144540	1	Basket load conform to EN280 standard for Australia
55	307P218320	1	Manual emergency operation
54	307P216290	1	Fixing point of harness
60	7815351	1	
100	3078151590	4	Load for a wheel

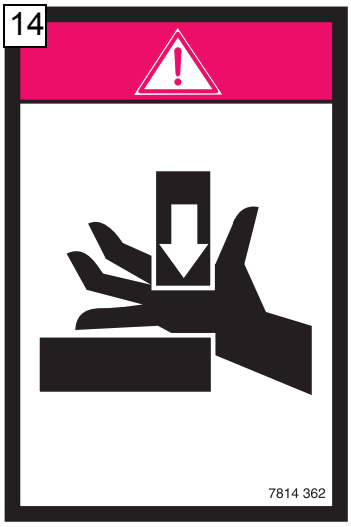
2.6.2 - Common "red" labels

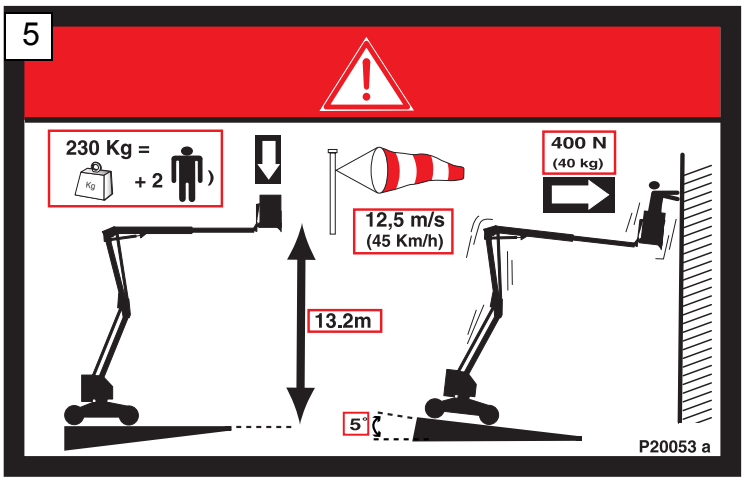


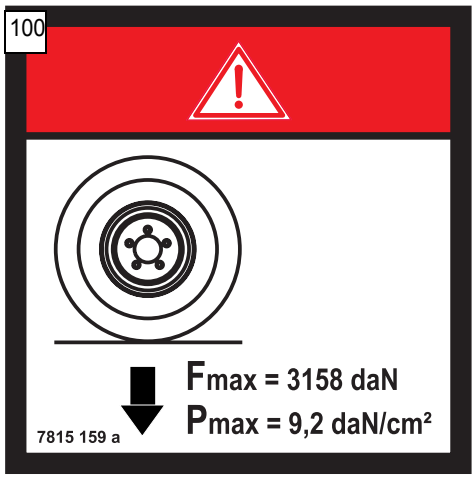


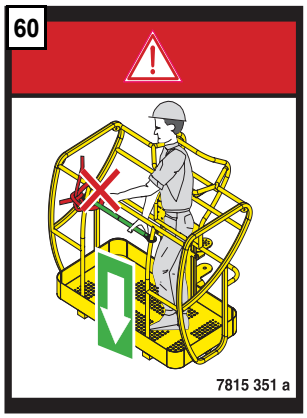




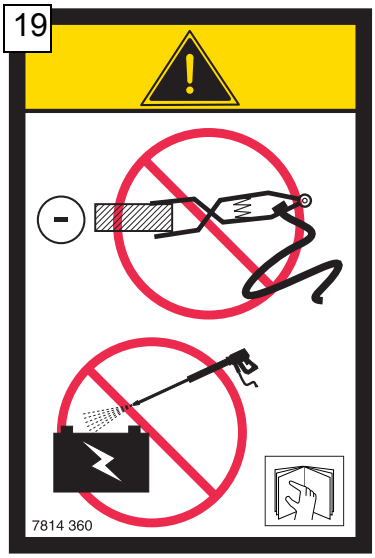


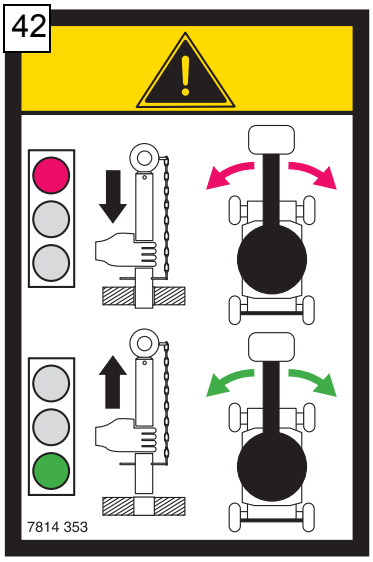


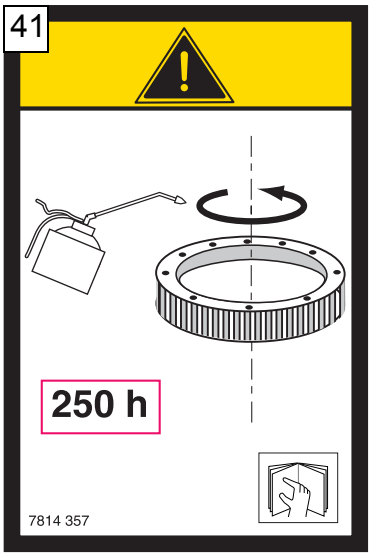




2.6.3 - Common "yellow" labels







2.6.4 - Other common labels

7

CONSIGNE D'UTILISATION

POUR UTILISER CET APPAREIL
L'OPERATEUR DOIT

1 - Lire et comprendre les informations contenues dans le manuel de conduite et les inscriptions apposées sur la machine, se familiariser avec les commandes.
2 - Etre formé et entraîné pour la conduite de celui-ci, sous la responsabilité de son employeur.
3 - Assurer correctement l'entretien suivant le catalogue constructeur.
4 - Ne pas utiliser l'appareil en cas de disfonctionnement.
5 - Ne pas laver sous pression les composants électriques.
6 - Ne rien démonter, la stabilité serait modifiée.
7 - Ne pas modifier l'appareil sans accord du constructeur.
8 - Ne pas utiliser la machine comme masse de soudure.
9 - Ne pas souder sur la machine sans déconnecter les cosses des batteries, se référer à la notice de conduite et d'entretien.

INSPECTION JOURNALIERE

1 - Vérifier le niveau d'huile hydraulique et le liquide des batteries.
2 - Vérifier s'il n'y a pas de signe apparent de défectuosité (fuite hydraulique, boulonnerie, liaisons électriques).
3 - Vérifier le fonctionnement de l'indicateur de devers en faisant fonctionner l'alarme sonore.

INSTRUCTION AVANT UTILISATION

1 - Enlever la broche de blocage d'orientation (s'il y a une tourelle).
2 - **IMPORTANT.** La prise doit être raccordée sur une installation électrique protégée par un disjoncteur différentiel 30 mA (NORME C15 100)

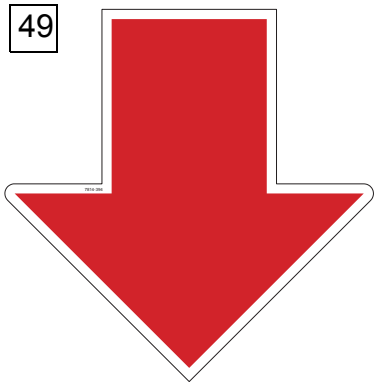
MISE EN ROUTE

1 - Déverrouiller l'arrêt d'urgence, puis actionner le bouton de démarrage.
2 - En cas de non fonctionnement, attendre 10 s et renouveler l'opération.

INTERDICTION
D'UTILISER L'APPAREIL
PENDANT LA CHARGE DES BATTERIES

7814 342

49



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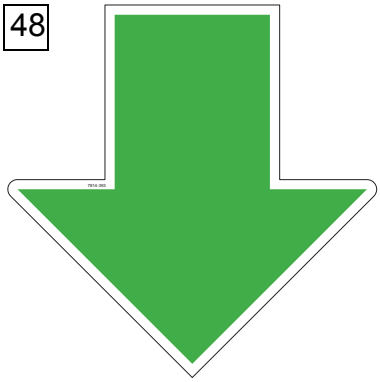

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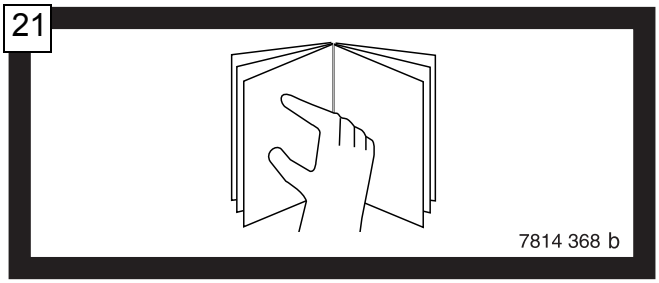

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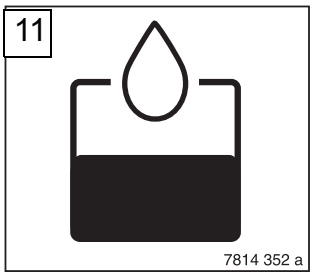

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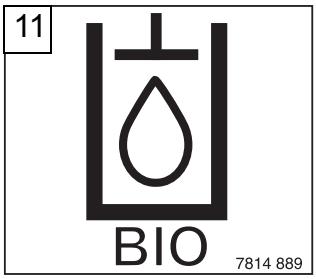

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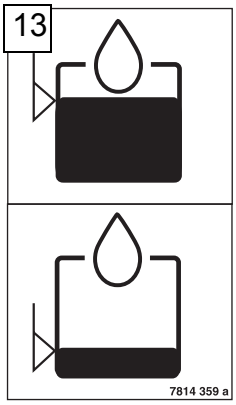

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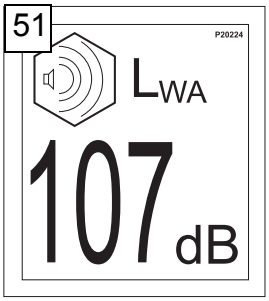

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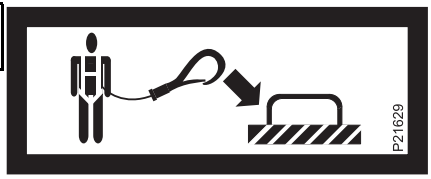

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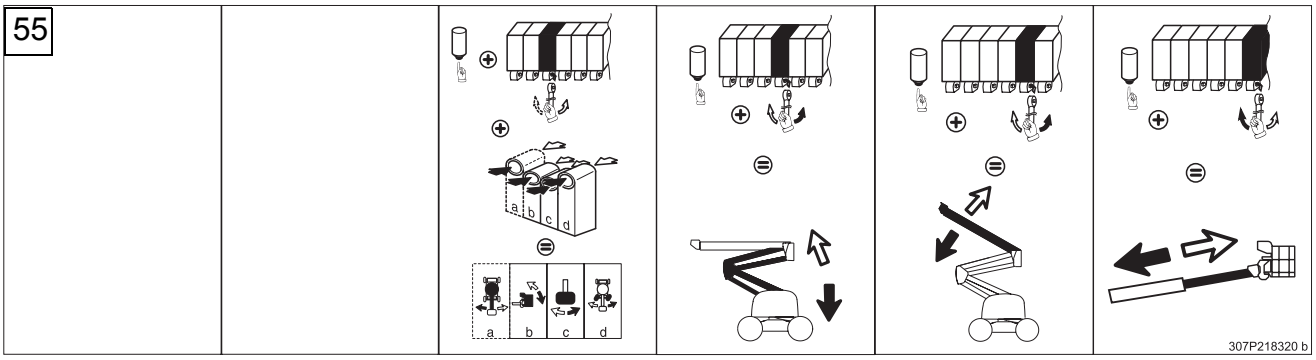

2.6.5 - Specific labels for Australia

56

Basket design loading is in accordance with EN 280

7814 454

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RESCUE OPERATIONS

- Turn the key-operated selector to turntable position
- Activate and hold the switch and use the emergency lever on the distributor corresponding with the movment required

7814 453

USE OF STANDBY UNIT

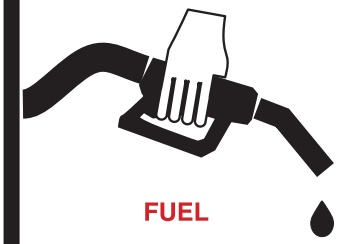
- Turn the key-operated selector to turntable position
- Be carefull that the emergency stop button is released
- Activate the switch in the triangle and activate the lever or the switch corresponding to the movment required in the same time

33

LIFTING POINT
USE 4000 Kg MIN.
RATED HOOK

7814 449 a

34



FUEL

FUELLING WITH A FILLER ONLY

7814 451

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CAUTION

FULL BODY HARNESS MUST BE USED

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7

RECOMMENDATIONS FOR USE

BEFORE USING THIS MACHINE
THE OPERATOR MUST

1 - Read and understand the information in the Operators Manual and the information marked on the machine, and become familiar with the controls.
2 - Receive training and practical experience in operating the machine, under the employer's supervision.
3 - Ensure that maintenance is performed in accordance with the manufacturer's instructions contained in the Operators Manual.
4 - Refrain from using the machine in the event of any malfunction.
5 - Avoid contact with electrical components when using high pressure cleaning equipment around the machine.
6 - Not remove any machine parts which might affect the stability.
7 - Not modify the machine without the manufacturer's written approval.
8 - Do not use the machine as a welding earth.
9 - Not carry out repairs on the machine involving welding without first disconnecting the battery.

DAILY INSPECTION

1 - Check the level of diesel fuel (for diesel engine platforms).
2 - Check that there are no apparent defects (hydraulic leaks, loose bolts, loose electric connections)
3 - Check that the tilt indicator operates correctly by manually tilting the switch with the power on.

INSTRUCTIONS BEFORE USE

1 - Remove the rotation locking pin (if fitted).
2 - **IMPORTANT**: when connecting AC power supply to the work platform, the wall power supply must be protected by 30 mA circuit breaker

START-UP

1 - Turn the battery isolator switch (if fitted) to the " on " position
2 - Unlock the emergency stop button then press the engine starter button.
3 - If the engine does not start, wait 10 seconds then repeat the operation.

THE MACHINE
MUST NOT BE USED
WHILE CHARGING THE BATTERIES

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10

DANGER

BEWARE OF OVERHEAD ELECTRICAL HAZARDS

REGULATION 133A of the CONSTRUCTION SAFETY ACT 1912 REQUIRES

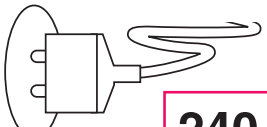
a. Minimum approach of an appliance to live electrical apparatus.
- 3 m for voltages up to 132,000
- 6 m for voltages above 132,000 and up to 330,000
- 8 m for voltages above 330,000

b. Inspection of the work site for electrical hazards before commencing to use the appliance.

c. Constant vigilance and an observer required whilst working or travelling the appliance in the vicinity of live electrical apparatus.

2.6.6 - Specific labels for Holland

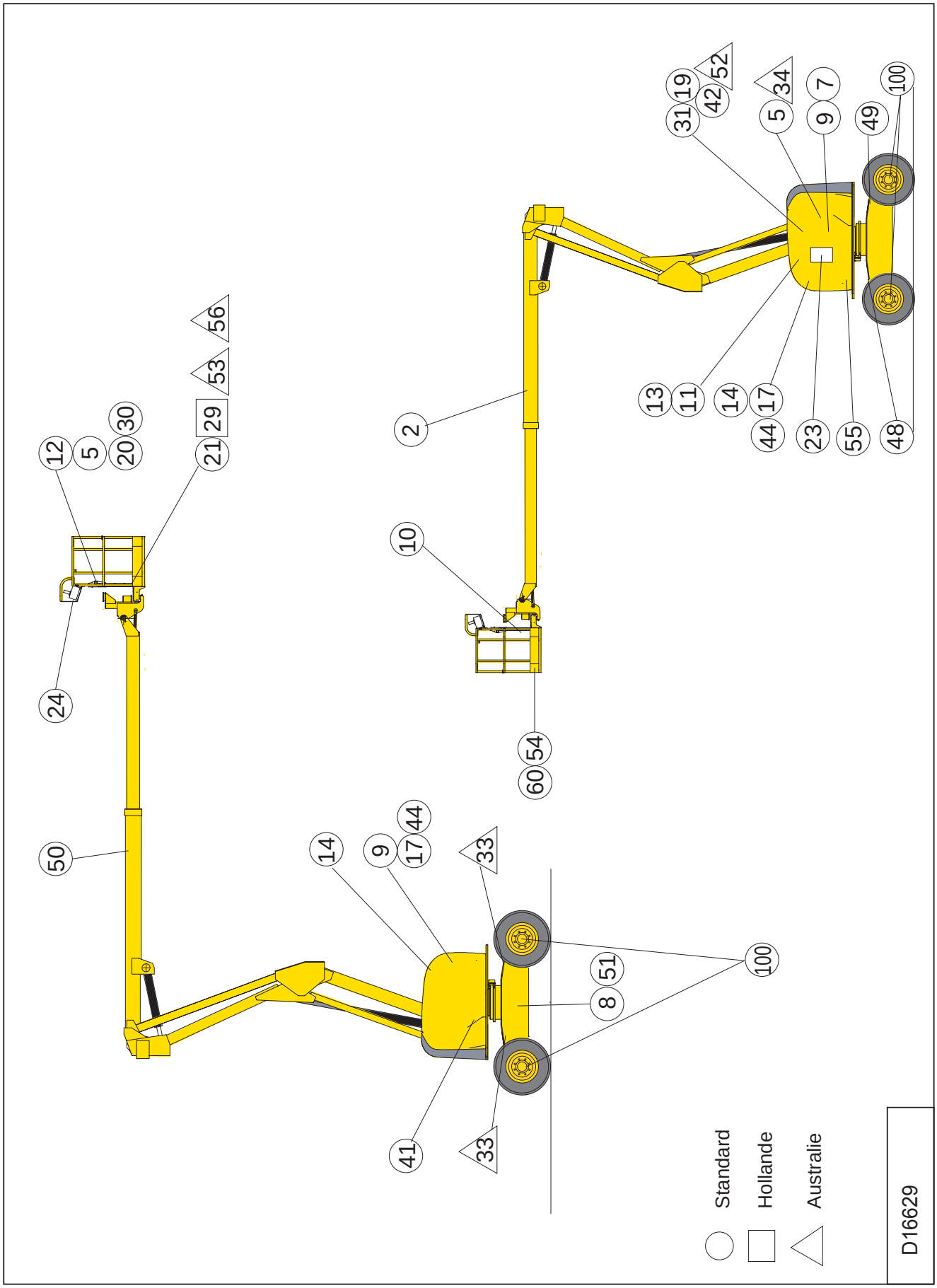
29



240 V

7814 573 a

2.6.7 - Label positions



3 - OPERATING PRINCIPLES

3.1 - HYDRAULIC CIRCUIT

All the machine's movements are powered by hydraulic energy from an open-circuit, self-regulating piston pump, equipped with a "LOAD SENSING" capacitor.

3.1.1 - Movement control

3.1.1.1 - Travel, slewing, arm lifting and boom lifting movements

These controls are accomplished by proportional distribution (with pressure compensation). The pump flow is automatically adapted to demand by the "LOAD SENSING" channel. In neutral, there is no flow to the pump.

3.1.1.2 - Telescoping, steering, basket rotation and compensation movements

These movements are controlled by 4-channel electrovalves with on/off flow. A proportional distributor tray supplies the flow required for these movements.

3.1.1.3 -Telescoping, boom lifting and arm lifting air cylinders

These are all equipped with sealed, covered balancing valves.

3.1.2 - Actuators

The type of actuator depends on the movement.

3.1.2.1 - Steering, telescoping, boom lifting

These movements are controlled by air cylinders equipped with sealed, covered balancing valves (except for steering).

Caution!
Only specialist personnel may make adjustments

3.1.2.2 - Platform rotation

Platform rotation uses a hydraulic motor. Rotation speed can be adjusted by flow limiters.

3.1.2.3 - Compensation

Compensation works by oil transfer between two cylinders with similar properties. The compensation receiver cylinder is equipped with a double covered controlled flap.

3.1.2.4 -Travel (moving the machine)

Four hydraulic motors mounted in the wheels drive the wheels via epicyclic reducers.

Pressure supply to the motors eliminates the brake action on the front wheels. As soon as movement stops, the brake is re-applied by spring action.

A hydraulic differential blocking system is provided on each axle.

The three speeds (high, medium or low) can be selected by a switch.

Speed	4x4 version principle
High speed	The steering axle is switched to free wheel and the flow supplied by the pump goes through the two motors mounted in series on the front wheels.
Medium speed	The steering axle is switched to free wheel and the flow supplied by the pump passes through the two motors mounted in parallel on the front wheels.
Low speed	The pump flow is divided between the front and rear axles. The flow to each axle supplies the axle's hydraulic motors placed in parallel.

3.2 - ELECTRIC CIRCUIT AND OPERATING SAFETY DEVICES

3.2.1 - General

The electric power used to control and start the thermal motor comes from a 12V battery.

Hours of operation are counted by a meter.

Caution!

Do not make movements before reading and understanding the instructions in Chapter 4.

To prevent the machine from being used in excess of its capacity, safety devices are provided to protect personnel and the machine. They disable the machine or neutralise movements.

In such cases, insufficient knowledge of the machine's characteristics or operation may lead one to believe a failure has occurred, when in reality, it is simply correct operation of the safety devices. It is therefore essential to assimilate all the instructions in the next few chapters.

If emergency or rescue operation is required, the safety devices are disabled.

3.2.2 - Automatic motor stop

The motor is automatically stopped when:

- the alternator no longer works
- oil pressure is too low
- oil temperature is too high.

3.2.3 - Platform load check

If the load in the platform exceeds the maximum authorised load, no movements are possible from the platform control station. The overload light indicator on the platform panel and the buzzer alert the operator. Load must be removed to reset the assembly.

3.2.4 - Tilt check

In the work position (machine unfolded), the fault light indicator on the platform control panel flashes and the tilt sensor emits an audible signal when maximum permitted tilt is reached. If the situation persists, after a time delay of 1 to 2 secs., the boom lifting (up), arm lifting (up), telescoping out movements are disabled and travel is impossible as long as the machine is unfolded.

To restore the travel movement, all lifting elements must be folded. Move the machine to restore an acceptable angle of tilt.

Caution!

When the machine is folded, the alarm is deactivated even when maximum authorised tilt is exceeded.

3.2.5 - Travel speeds

The machine must be started and the "fail-safe" safety device held activated to move the machine. Releasing the "fail-safe" button causes the travel movement to stop.

3.2.5.1 -Transport position (platform folded)

In the transport position, the machine must be in the following configuration:

- Arm and boom completely lowered
- Telescope fully retracted
- Height under the basket floor must be 0.65 metres
- Overall length of the machine is 6.7 metres

There are three selectable proportional travel speeds. Adapt speed to the conditions (obstacles, turns, etc).

3.2.5.2 -Work position

In the idle position, the machine must be in the following configuration:

- Arm and boom completely lowered
- Telescope fully retracted
- Height under the basket floor is 0.40 metres
- Overall machine length is 6.70 metres

As soon as the machine leaves the transport position:

- micro-speed is automatically selected. Machine speed must not exceed 0.7 km/h.
- travel is disabled if tilt exceeds the authorised limit.

NB: When travelling, it is impossible to perform the arm lifting, boom lifting, telescoping and turntable slewing movements, unless the machine is equipped with the movement separator function (all movements are possible during travel at low and medium speed).

To approach an obstacle, use control proportionality.

3.2.6 - Emergency or rescue procedure

Caution!

Only a skilled operator may perform emergency or rescue operations.

3.2.6.1 - Rescue

If the operator in the platform ceases to be able to control movement in spite of flawless machine operation. A skilled operator on the ground can use the turntable control panel with the diesel main power source to bring the operator in the platform back to the ground.

3.2.6.2 - Emergency

Caution!

Use of the emergency unit is exclusively reserved for rescuing personnel if the main hydraulic power supply fails. Any other use may cause damage

A standby electropump set controlled from either the platform or the turntable can be used in the event of failure of the main pump.

If an operating incident prevents the operator in the platform from coming back down to the ground, a skilled operator can do so using the electric pump and the electric controls on the turntable control panel.

Instructions:

- Turn the key to the "turntable station" position (Ref 13 , Photo :"Turntable" control panel, page 31)
- Activate the switch (Ref 9, Photo :"Turntable" control panel, page 31) controlling the emergency unit.
- Activate the switches corresponding to the movements required (Ref 5-6-7-8, Photo :"Turntable" control panel, page 31).

3.2.6.3 -Manual emergency system

If the diesel motor works, in the event of failure of the turntable and platform control panels, movements can be controlled using the mechanical levers, and pushing the manual control of the electrovalve on the general distribution block.

Manual emergency operation help label

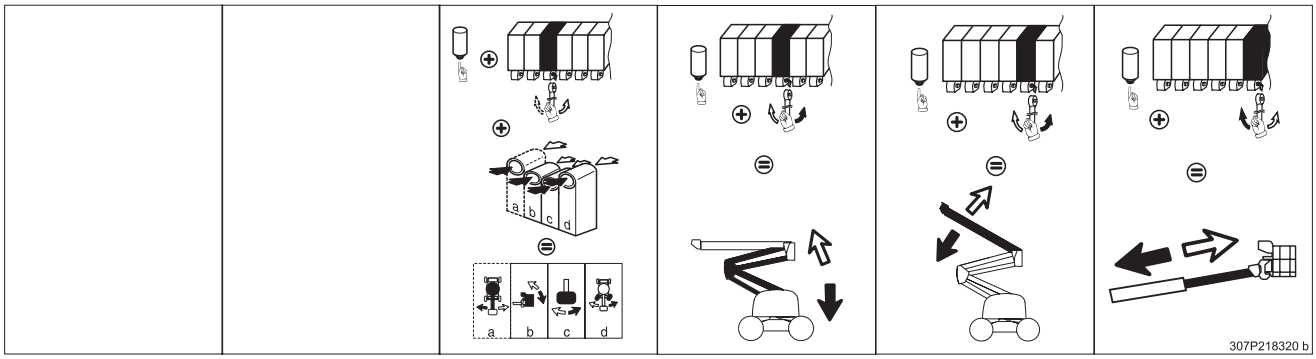
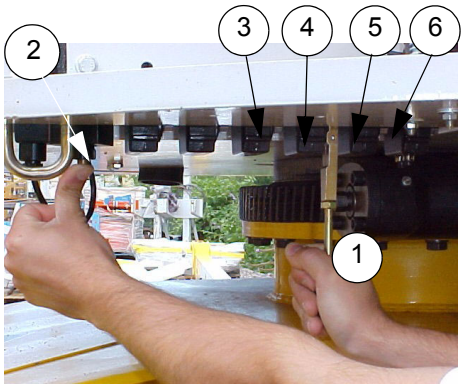


Photo 1: Manual emergency operation



- Manual emergency operation for turntable slewing: (Distributor no. 3, Photo :Manual emergency operation, page 25)

Instructions:

- Remove the cover,
- Grasp the lever, (Ref 1, Photo :Manual emergency operation, page 25)
- Position the lever on distributor no. 3, (Ref 1, Photo :Manual emergency operation, page 25)
- Press the manual control of the electrovalve, (Ref 2, Photo :Manual emergency operation, page 25)
- While pressing the manual control,
  * Pull the lever for turntable slewing to the left (as seen from the basket).
  * Push the lever for turntable slewing to the right (as seen from the basket.

- Manual emergency operation for arm movements: (Distributor no. 4, Photo :Manual emergency operation, page 25)

Instructions:

- Remove the cover,
- Grasp the lever, (Ref 1, Photo :Manual emergency operation, page 25)
- Position the lever on distributor no. 4, (Ref 1, Photo :Manual emergency operation, page 25)
- Press the electrovalve's manual control, (Ref 2, Photo :Manual emergency operation, page 25)
- While pressing the manual control,
  * Pull the lever to raise the arm.
  * Push the lever to lower the arm.

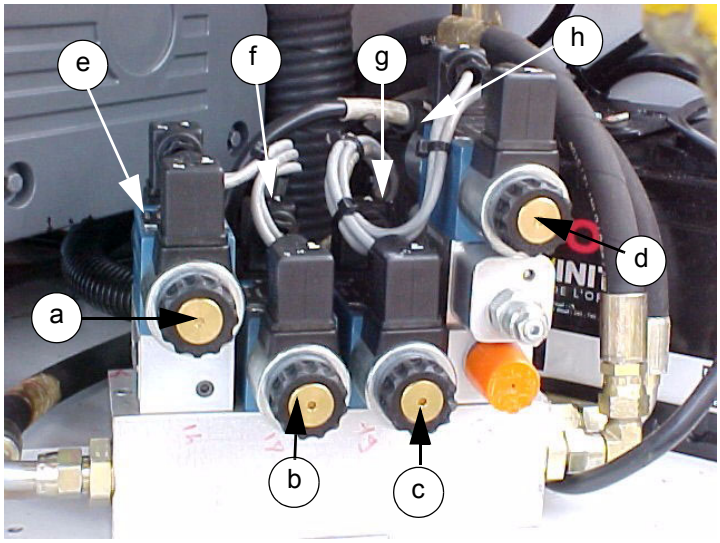
- Manual emergency operation for boom movements: (Distributor no. 5, Photo :Manual emergency operation, page 25)

Instructions:

- Remove the cover,

- Grasp the lever, (Ref 1, Photo :Manual emergency operation, page 25)
- Position the lever on distributor no. 5, (Ref 1, Photo :Manual emergency operation, page 25)
- Press the electrovalve manual control, (Ref 2, Photo :Manual emergency operation, page 25)
- While pressing the manual control,
  * Pull the lever to raise the boom.
  * Push the lever to lower the boom.

Photo 2: Distribution block on/off



Caution!

Two people are required to perform telescoping, steering, basket rotation and compensation movements.

- Manual emergency operation for the other movements: (Distributor no. 6, Photo :Manual emergency operation, page 25)

Telescoping movement:

Instructions:

- Remove the cover,
- Position the lever on distributor no. 6, (Ref 1, Photo :Manual emergency operation, page 25)
- At the same time, press the electrovalve's manual control, (Ref 2, Photo :Manual emergency operation, page 25) and the distributor corresponding to the telescoping movement distirbutor (Distributor "a" and "e", Photo :Distribution block on/off, page 26)
  - Telescope extension
    * Pull the lever
    * Press the manual control (Ref 2, Photo :Manual emergency operation, page 25)
    * Press distributor "a"
  - Telescope retration
    * Pull the lever
    * Press the manual control (Ref 2, Photo :Manual emergency operation, page 25)
    * Press distributor "e"

Steering movement:

Instructions:

- Remove the cover,
- Grasp the lever, (Ref 1, Photo :Manual emergency operation, page 25)

- Position the lever on distributor no. 6, (Ref 1, Photo :Manual emergency operation, page 25)
- At the same time, press the electrovalve manual control, (Ref 2, Photo :Manual emergency operation, page 25) and the distributor corresponding to the steering movement required (Distributor "b" and "f", Photo :Distribution block on/off, page 26)
  - Basket movement to the right
    * Push the lever
    * Press the manual control (Ref 2, Photo :Manual emergency operation, page 25)
    * Press distributor "b"
  - Basket movement to the left
    * Push the lever
    * Press the manual control (Ref 2, Photo :Manual emergency operation, page 25)
    * Press distributor "f"

Basket rotation movement:

Instructions

- Remove the cover,
- Grasp the lever, (Ref 1, Photo :Manual emergency operation, page 25)
- Position the lever on distributor no. 6, (Ref 1, Photo :Manual emergency operation, page 25)
- At the same time, press the electrovalve manual control, (Ref 2, Photo :Manual emergency operation, page 25) and the distributor corresponding to basket rotation movement (Distributor "c" and "g", Photo :Distribution block on/off, page 26)
  - Basket rotation movement to the right
    * Push the lever
    * Press the manual control (Ref 2, Photo :Manual emergency operation, page 25)
    * Press distributor "c"
  - Basket rotation movement to the left
    * Push the lever
    * Press the manual control (Ref 2, Photo :Manual emergency operation, page 25)
    * Press distributor "g"

Compensation movement:

Instructions:

- Remove the cover,
- Grasp the lever, (Ref 1, Photo :Manual emergency operation, page 25)
- Position the lever on distributor no. 6, (Ref 1, Photo :Manual emergency operation, page 25)
- At the same time, press the electrovalve manual control, (Ref 2, Photo :Manual emergency operation, page 25) and the distributor corresponding to the compensation movement (Distributor "d" and "h", Photo :Distribution block on/off, page 26).
  - Downward compensation movement
    * Push the lever
    * Press the manual control (Ref 2, Photo :Manual emergency operation, page 25)
    * Press distributor "d"
  - Upward compensation movement
    * Push the lever
    * Press the manual control (Ref 2, Photo :Manual emergency operation, page 25)
  - Press distributor "h"

4 - OPERATION

4.1 - UNLOADING - LOADING - MOVING - PRECAUTIONS

Caution!

When transporting the machine, you must block the turntable with the slew pin on the turntable. (See photo Slew pin, page 33)

Before any handling operation, check that the machine is in good condition and that it has not suffered damage during transport. Otherwise, express any necessary reservations to the transport company.

Caution!

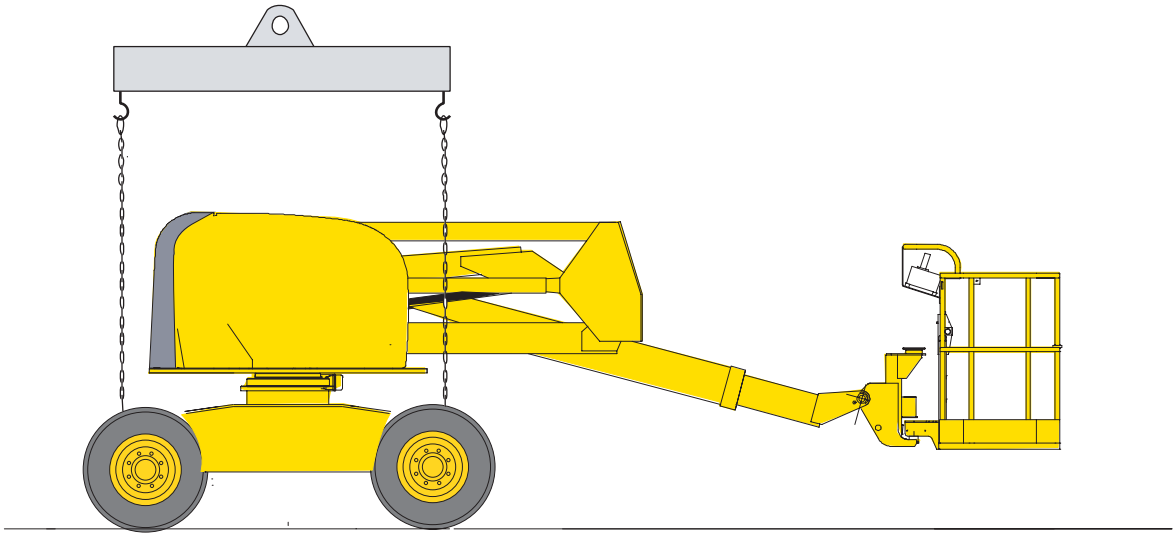
Incorrect movement may cause the machine to fall and cause very serious bodily and material damage.

Unload the machine on a stable, sufficiently resistant, level surface, see pressure on the ground (Chap 2.4 -, “Technical characteristics”, page 10), free of obstacles.

4.1.1 - Unloading by lifting

Use a lifting beam with 4 slings.

Fig. 4 - Lifting



Check that:

- the lifting accessories are in good working order and of sufficient capacity.
- the slinging accessories can bear the load and are not abnormally worn.
- the slinging lugs are clean and in good condition.
- the operating personnel is authorised to use lifting equipment.

To unload:

- fasten the 4 slings onto the slinging lugs.
- slowly lift, checking that the load is evenly distributed and put the machine down slowly.

Caution!

Never stand under or too close to the machine during movement.

4.1.2 - Unloading with ramps

Select low travel speed.

When the machine is folded, the alarm is deactivated even when maximum authorised tilt is exceeded.

Caution!

This method requires the machine to be started, see (Chap 4.3 -, "Starting up", page 35) to avoid all risk of incorrect movement.

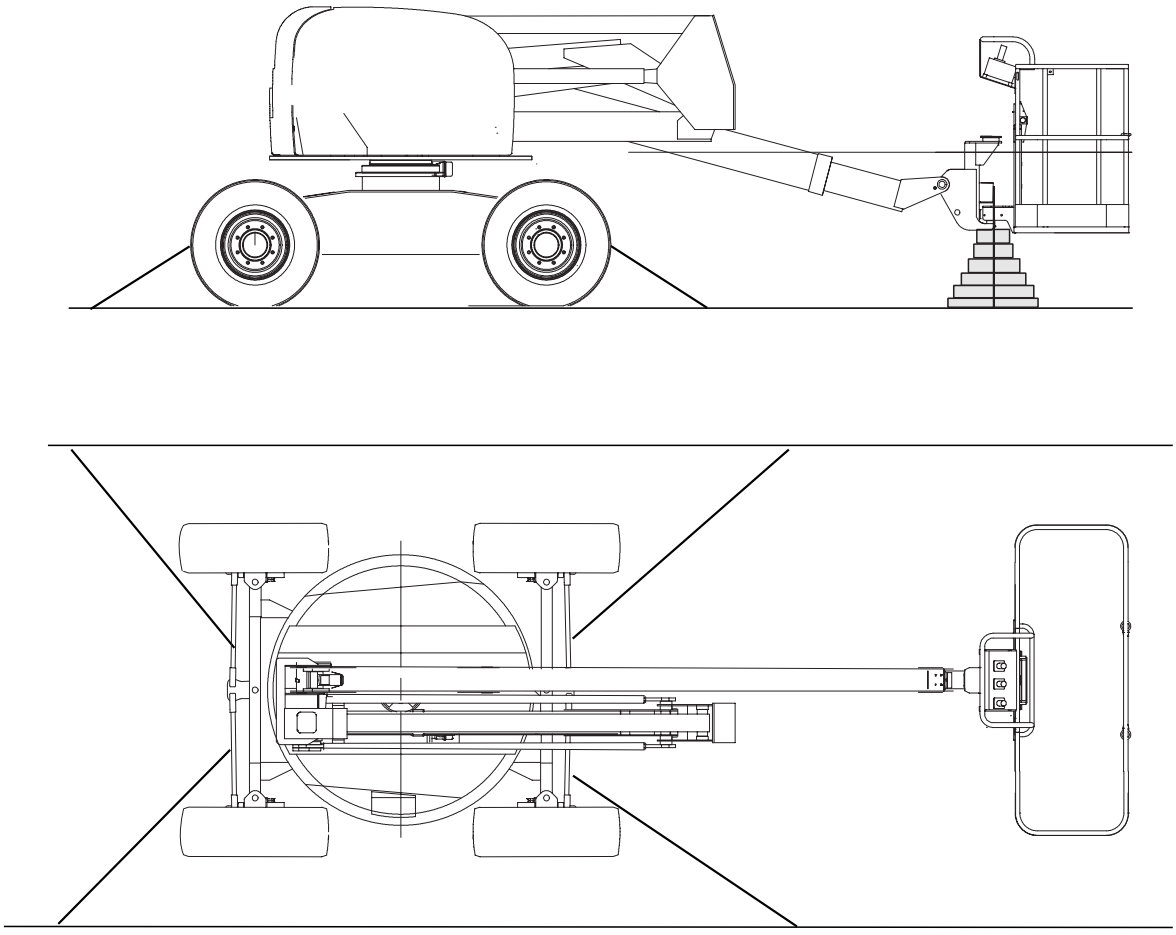
Precautions: ensure that the ramps can bear the load, that they are properly secure and that adhesion is sufficient to avoid all risk of sliding during movements.

NB: The ramp slope is almost always greater than the maximum allowed tilt for working, therefore the boom must be lowered to enable travel. The alarm is deactivated even when maximum authorised tilt is exceeded. However, certain precations must be taken to avoid all risks of slipping, etc. see Chapter 1 "General and safety recommendations".

4.1.3 - Loading

The precautions are the same as for unloading.

Fig. 5 - Loading



Wedges must be used as shown above:

- one sling for each lug
- a strap at basket support level.

To climb the ramps of a truck, select low speed.

4.2 - OPERATIONS PRIOR TO FIRST USE

Caution!

When washing the machine at high pressure, direct the jet away from electric boxes and cabinets

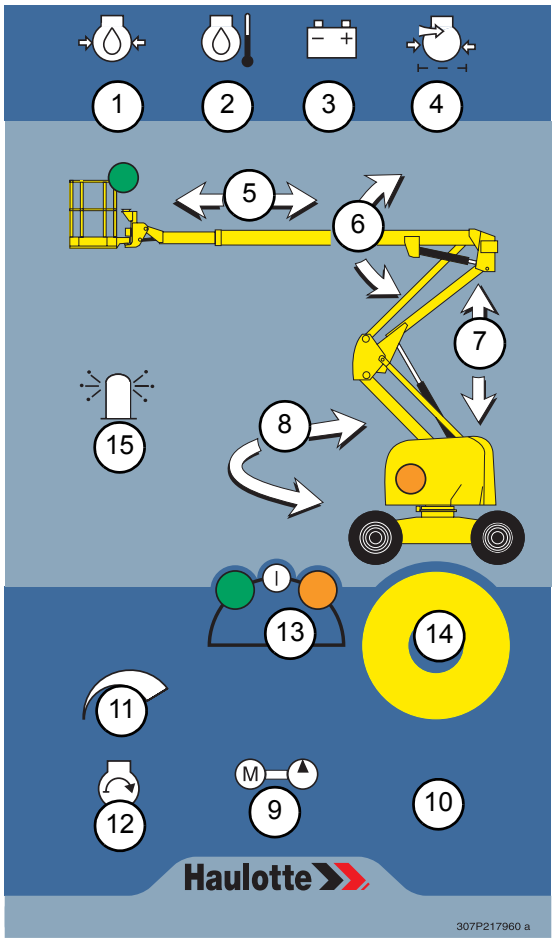
IMPORTANT: Before each use of the machine or after a period of storage, consult the start-up opertions (Chap 5.3.1 -, “Summary table.”, page 44) to check the various levels and check certain points of machine maintenance.

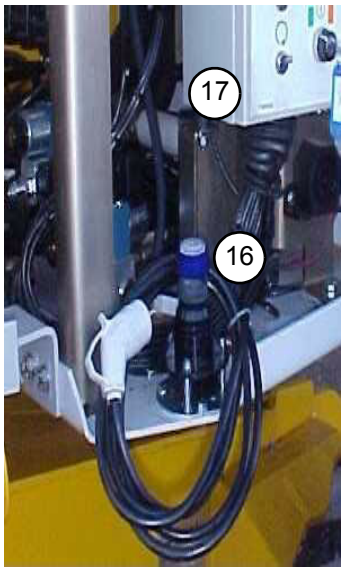
REMINDER: Before any operation, find out about the machine, by reading this manual, the motor manual and the instructions on the various plates.

4.2.1 - Familiarisation with the control stations

4.2.1.1 -"Turntable" control station

Photo 3: "Turntable" control panel



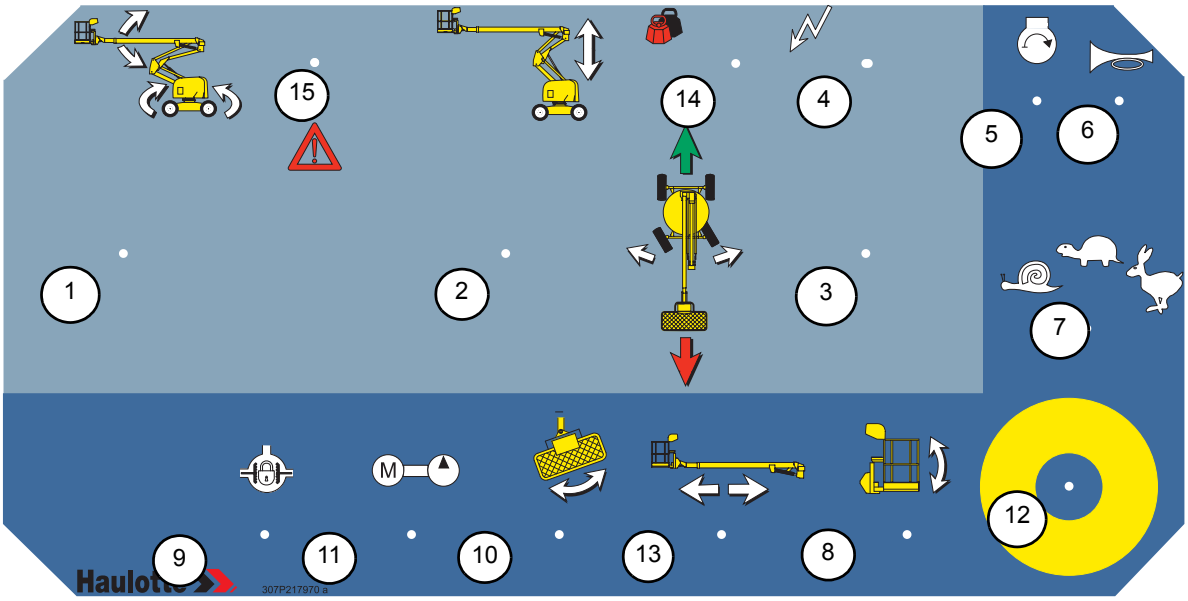


The turntable control station comprises the following elements:

1 - Motor oil pressure light indicator	10 - Hour counter
2 - Motor temperature light indicator	11 - Motor regime switch
3 - Battery charge indicator	12 - Motor ignition button
4 - Filter clogging indicator	13 - Turntable station / stop / platform station selection
5 - Boom telescoping control	14 - Emergency stop button
6 - Boom lifting control	15 - Flashing light control
7 - Arm lifting control	16 - 220 V single - 16 A supply plug
8 - Turntable slewing control	17 - TIlt sensor
9 - Standby electropump set	

4.2.1.2 -"Platform" control station

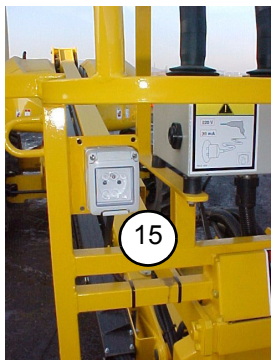
Photo 4: "Platform" control panel



1.Slewing and boom lifting manipulator	8.Basket compensation
2. Arm lifting manipulator	9. Differential blocking switch
3.Travel manipulator	10.Platform rotation switch
4. Power on light indicator	11.Emergency control
5.Ignition switch	12.Emergency stop button
6. Horn button	13.Telescope out
7.Low, medium or high speed selector switch	14-Platform overload indicator
	15. Fault indicator

NB: When using a manipulator to control movement, make sure the "fail-safe" safety device is activated to enable movement.

Photo 5: 220V plug



4.2.2 - Checks before use

4.2.2.1 -Working area

- Ensure that the machine is on a level, stable floor, able to bear the weight of the machine (see ch. 2.4 - pressure on the ground).

Caution!
See table of characteristics for maximum authorised tilt.

- Make sure that no obstables can hinder movement:
  - travel (moving the machine)
  - turntable slewing
  - telescoping and lifting: see "working area" diagram.

4.2.2.2 -General appearance

Photo 6: Slew pin

- Ensure that the turntable rotation blocking pin has been removed (ref. 1 , Photo :Slew pin, page 33).
- Visually inspect the whole machine: pay particular attention to paint chips or battery acid leaks.
- Check that all bolts, nuts, connections and hoses are tight, that there are no oil leaks, and that no electric wires have become damaged or disconnected.
- Check the boom and platform: no visible damage, no traces of wear or deformation.
- Check that there are no leaks, traces of wear, impact or scratches, rust or foreign matter on the cylinder rods.
- Check that there are no leaks from the wheel reducers.
- Pump and hydraulic unit: no leaks, all components tight.
- Check that the wheel reducers have not become disconnected.
- Check the tightness of the wheel nuts and the extent of wear on the tyres.

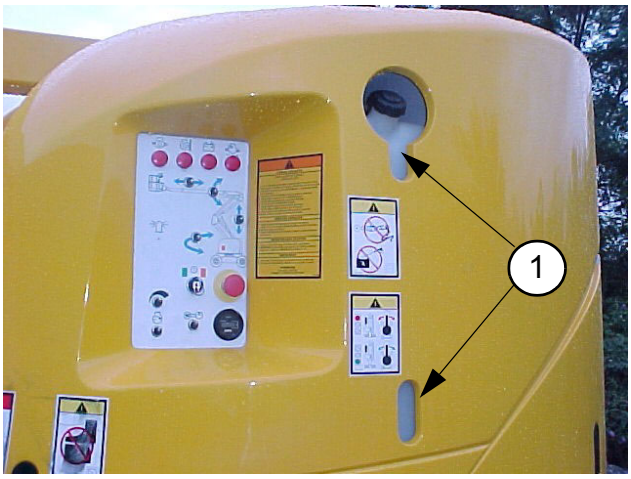
Caution!
These machines are not insulated and must not be started up near electric wires.

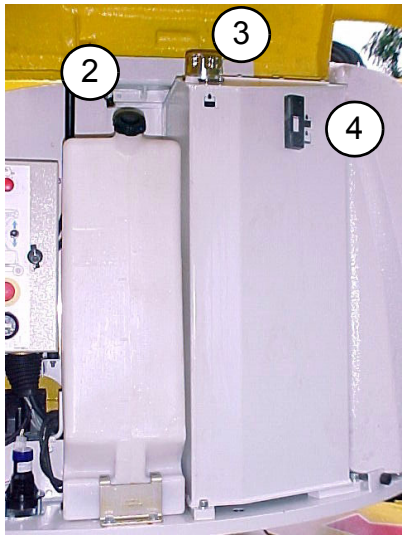
4.2.2.3 -Electricity

- Check that the battery terminals are clean and tight: loose or corroded terminals may result in a power loss.
- Respect the safety instructions provided by the battery manufacturer
- Check that the platform control panel supply cable is in good condition.
- Check that the emergency stops are working correctly.
- Check that the tilt detector works properly (ref.19 , Photo :"Turntable" control panel, page 31) by tilting the support plate. Beyond the maximum authorised tilt value, it should sound an alarm if the machine is unfolded.

4.2.2.4 -Tank compartment

Photo 7: Tanks



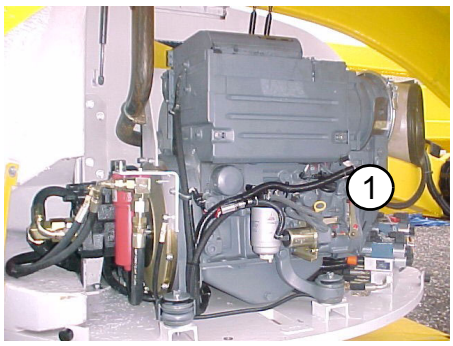


- Check the levels:
  - of hydraulic oil: the level is visible when the cover is open (ref. 4, Photo :Tanks, page 34). If necessary, top up via the cap (ref. 3 , Photo :Tanks, page 34).
  - of diesel: the minimum and maximum levels are visible when the cover is closed, thanks to two light indicators (ref. 1, Photo :Tanks, page 34). Fill up if necessary (cap ref. 2 , Photo :Tanks, page 34).

NB: When filling up, use the recommended products listed in (Chap 5.2.1 -, “Consumables”, page 42).

4.2.2.5 -Motor compartment

Photo 8: Motor



- Check that the air filter is clean - see motor manual.
- Check the level of motor oil: gauge (ref 1, Photo :Motor, page 34). Fill up if necessary (see motor manual).
- Check the air filter clogging indicator (ref. 4 , Photo :"Turntable" control panel, page 31). If the red indicator is visible, replace the filtration cartridge (Chap 5.3.1 -, “Summary table.”, page 44).
- Check the electrolyte level in the battery: the level should be approximately 10 mm above the plates. Fill up if necessary with distilled water.

4.3 - STARTING UP

IMPORTANT:

Only start up after all the operations described in the previous chapter have been carefully carried out.

To become familiar with the machine, carry out the first few manoeuvres at ground level, keeping the machine in its transport configuration: counterweight at the front, boom lowered.

Caution!

When the counterweight is above the steering wheels, the travel and steering controls work in the opposite direction.

REMINDER: The main operation station is in the platform. In normal use, the "turntable" operating station is a standby or emergency station and is only used if absolutely necessary.

4.3.1 - Operations from the ground

4.3.1.1 - Motor ignition

(See photo "Turntable" control panel, page 31)

- Make sure that the emergency stop button (ref 14) is pulled out.
- Put the operating station selection key switch (ref 13) in the "ground control" position (pictograms). In this position, the "platform" control panel controls are cancelled.
- The motor oil pressure (ref 1) and battery charge (ref 3) light indicators are on. The air filter clogging light indicator (ref. 4) is off.
- Press the ignition button (ref 12). The motor starts, the light indicators (ref 1 and 3) go off.

NB: If the motor fails to start, cut the contact by pressing the emergency stop and start the operation again.

- Leave the motor to warm up, while you check proper operation of the hour counter (ref 10), motor and pump.

4.3.1.2 - Movement tests

(See photo "Turntable" control panel, page 31)

Caution!

Make sure that no obstacles can interfere with machine movements.

- Test the lifting movement in the upwards and downwards movements (control ref. 6).
- Stop boom lowering in the horizontal position.
- Then test the turntable slew movements in both directions (control ref. 8) and telescope in/out movements (control ref. 5) then lower the boom completely.

4.3.1.3 - Switch to "platform" control

Put the key selector switch (ref.13 , Photo :"Turntable" control panel, page 31) in the "platform" position (green rectangle).

- Check proper operation of the tilt sensor (ref.16 , Photo :"Platform" control panel, page 32).

4.3.2 - Operations from the platform

NB: When you want to move the machine, the boom must be raised a few metres to prevent the basket trailing on the ground.

(See photo "Platform" control panel, page 32)

Climb in the basket, respecting the maximum load instructions and distributing the load evenly around the platform if necessary.

Caution!
MAXIMUM LOAD:
HA16X basket 1800x800:
230 kg (including 2 people).
HA16X basket option 2300x800:
230 kg (including 2 people)

NB: If maximum load is nearly reached, the buzzer will sound. If the maximum limit is exceeded, all machine movements are disabled (except basket rotation), and load must be removed. There is no load restriction with the reach.

4.3.2.1 - Control station test

- Before any movement, make sure that the green light indicator (ref.4) is on, showing that machine power is on and that the selector switch is in the "platform" position
- Make sure that the emergency stop button (ref.12) is unlocked.
- Check that the buzzer works properly.

4.3.2.2 - Movement tests

- The corresponding manipulator or selector switch must be selected to make a movement.
- Activate the "fail-safe" safety device and the required manipulator.
- The speed and the angle of tilt of the manipulators make the movement gradual.
- If the floor is not horizontal, correct the platform position with the corresponding selector switch.
- Test the telescoping and basket rotation movements, using the corresponding selector switch.
- Test the steering movement of the rear axle using the selector switch on the handle of the travel manipulator.
- Machine in the folded position, try the three travel speeds, by activating the speed selector switch.
- The direction of movement is shown by the coloured arrows.

Work can now be started.

4.3.3 - Stopping the machine

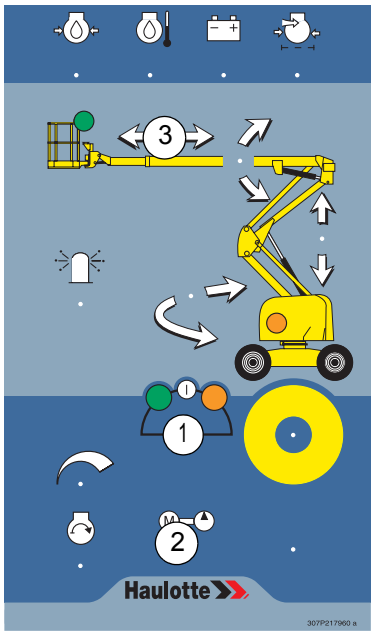
After using the machine, it is important to restore the machien to its idle position, i.e. folded, with the turntable control panel key in the stop position (ref 13, Photo :"Turntable" control panel, page 31) and remove the key to avoid all risk of use.

Caution!

Use of the emergency unit is exclusively reserved for rescuing personnel if the main hydraulic power supply fails. Any other use may cause damage

4.4 - STANDBY OPERATION WITH THE STANDBY ELECTROPUMP UNIT

Photo 9: Standby control



There is a way of making movements when the main power source fails. It is an electropump unit supplied by the ignition battery. This can be controlled from either the turntable control panel or the platform control panel.

The standby electropump control operates on both control panels in the same way.

- Instructions:
  - Select the control panel to be validated (orange or green), (Ref 1, Photo :Standby control, page 37)
  - Activate and maintain the standby control switch (Ref 2 , Photo :Standby control, page 37)
  - Activate and maintain the switch corresponding to the movements required (Ref 1, Photo :Standby control, page 37).

4.5 - RESCUE OPERATION

If the machine is working normally, but the operator in the platform is unable to bring it down, an operator on the ground may do so.

- Put the selection key in the "turntable" position (ref. 13 , Photo :"Turntable" control panel, page 31).
- Control the required movements using the controls corresponding to normal operation.

4.7 - UNCOUPLING

It is possible to uncouple the reducing gears on the drive wheels to be able to tow the machine if it breaks down.

Caution!

In this configuration, the machine is no longer braked.

Uncoupling procedure:

- Undo central screw (ref. 1, , Photo :, page 38)) to the end.Do not force it, because it can break the gear motors definitively. Now the machine is uncoupled.

Caution!

To tow the machine, it is essential to use a rigid bar and not to exceed 5 kph.

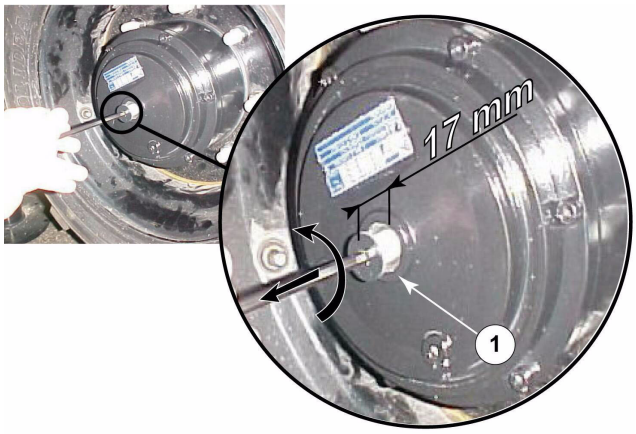


Photo 14

Caution!

The coupling of gear motors must be carried out by competent operators.

Coupling procedure:

- Machines with stabilisers:
  - Reassemble the machine upon stabilisers.
  - Put central screw back on without forcing it to engage the gear clutches. If you note any resistance, move the wheel so that its teeth connect with those of the gear clutches.
- Once the gear clutches have connected, tighten central screw to the end.Machines without stabilisers:
  - Put central screw back on without forcing it to engage the gear clutches. If you note any resistance, very gently activate the control for translation into low gear.
  - Once the gear clutches have connected, tighten central screw to the end.

NOTA : *Handling is facilitated when it is carried out with 2 people*

Caution!

This operation is to be carried out on even ground.

Caution!

As long as the 4 gear clutches are not in place, the machine does not slow down properly.

5 - MAINTENANCE

5.1 - GENERAL RECOMMENDATIONS

The maintenance operations given in this manual apply when the machine is used in ordinary conditions.

Caution!

- Do not use the machine an a welding earth.

- Do not weld without disconnecting the (+) and (-) terminals of the batteries.

- Do not start other vehicles with the batteries connected.

Under difficult conditions: extreme temperatures, high humidity, a polluted atmosphere, high altitude, etc. some of these operations should be carried out more frequently and special precautions may be necessary.

For more details check the motor manufacturer's notice and consult the local PINGUELY-HAULOTTE agent.

Only qualified and competent personnel may carry out interventions on the machine and they must respect the safety instructions relating to the protection of Personnel and the Environment.

As far as the motor part is concerned, refer to the manufacturer's manual and instructions.

Check regularly that the safety devices are working correctly:

- Tilt: buzzer and movements disabled.
- Platform overload: The overload system is set so that it trips before 120% permitted load.
- Switch to micro-speed when the machine is unfolded.

5.2 - MAINTENANCE PLAN

The plan (following page) shows the frequency of maintenance, the area to be worked on (device), and the consumables to use.

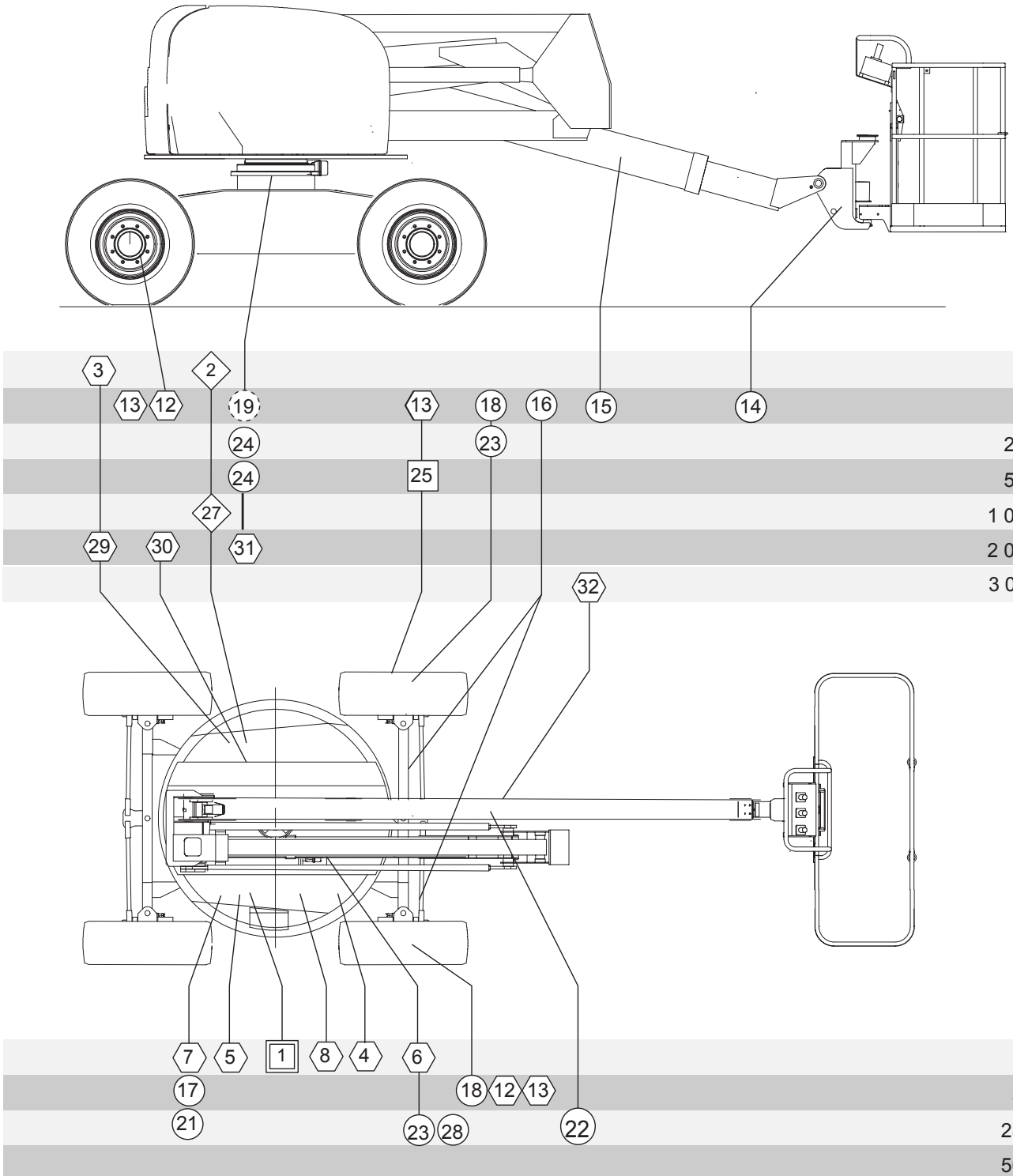
- The reference shown in the symbol shows the area maintained based on the frequency.
- The symbol represents the consumable to be used (or the operation to be carried out).

5.2.1 - Consumables

Consumable	Specification	Symbol	Lubricants used by Pinguely-Haulotte	ELF	TOTAL
Motor oil	SAE 15W40		SHELL / RIMULA		
Gear box oil	SAE 90		ESSO EP 80 W 90	Tranself EP 80 W 90	TM 80 W/90
Hydraulic oil	AFNOR 48602 ISO VG 46		BP SHF ZS 46	HYDRELF DS 46	EQUIVIS ZS 46
Bio-degradable hydraulic oil (optional)	Bio ISO 46				
Lithium grease	KP 2 K		ESSO Beacon EP2	Epaxa 2	
Lithium grease	NLGI 2 EP		ESSO Moly Multi-Purpose Grease	Cadrexa GR1 AL	
Leadfree grease	Grade 2 or 3		ESSO GP GREASE	Multimotive 2	Multis EP 2
Replacement or specific operation					

5.2.2 - Maintenance plan

Hours



3 2	10
13 12 19 13 18 16 15 14	50
24 23	250
24 25	500
27	1 000
29 30 31	2 000
32	3 000
7 5 1 8 4 6	10
17 18 12 13	50
21 23 28 22	250
	500

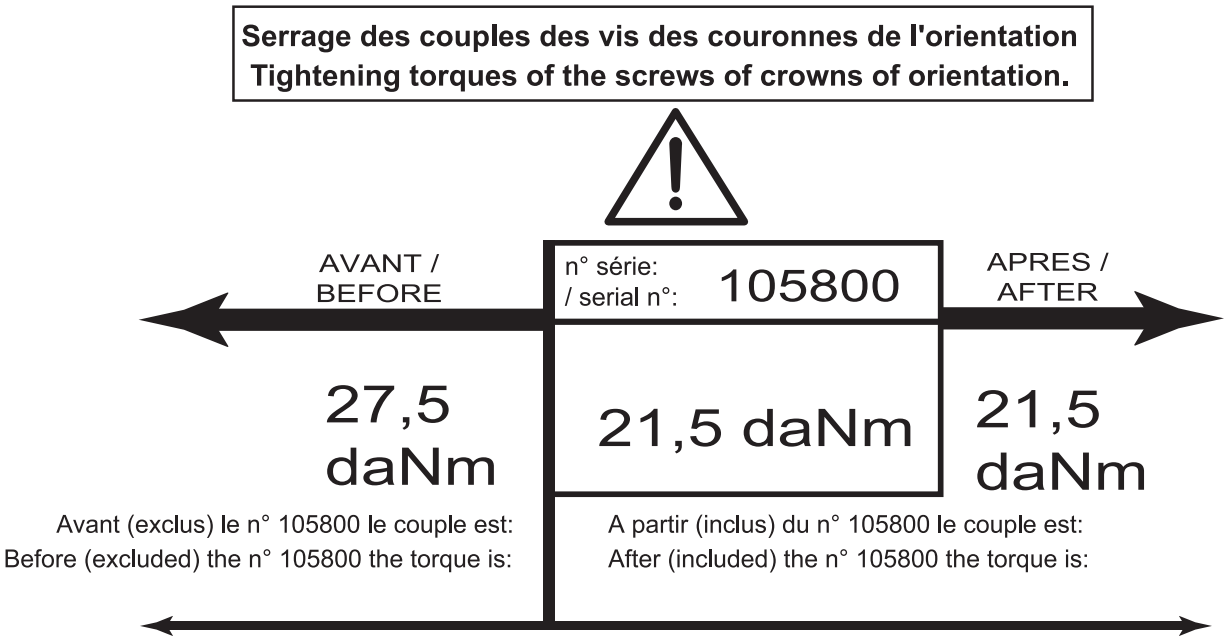
5.3 - OPERATIONS

5.3.1 - Summary table.

Periodicity	Ref.	Operation
Every day or before each use	1 2 3 4 8 5 6 7	• Check levels: - motor oil - hydraulic oil - diesel - electric batteries • Check cleanliness of: - diesel prefilter, replace if water or impurities are found - motor air filter - machine (in particular, check the seals of connectors and hoses, use this opportunity to check the condition of tyres, cables and all equipment and accessories. Check hydraulic oil filter clogging; an indicator is revealed if clogged
The first 50 hours	17 18 19 12	• Change the hydraulic filter cartridge (see 250 hr periodicity) • Empty drive wheel reducers (see 500 hr periodicity) - 2 points for 4x2 model - 4 points for 4x4 model • Check tightness: - of slew ring screws (torque 21.5 daNm) - of wheel nuts (torque 32 daNm)
Every 50 hourss	13 14 15 16	Motor: see manufacturer's manual. Check the level of the drive wheel reducers (Chap 5.3.3.2 -, "Drive wheel reducers", page 46) Grease: • basket link part joint axle: 4 points. • boom base axle: 1 point. • wheel pivot axles: 8 points.
Every 250 hours	21 23 24 22 24 28 19 28	Motor: see manufacturer's manual • Change the hydraulic filter cartridge • Grease: - the bearings of the 4x2 steering wheel bearings (remove the cap) - the slew ring bearing path (orient during the operation): 2 points - the friction parts of the telescope (spatula) - the slew ring teeth, using a brush - the battery terminals - slew ring: 2 points • Check: tightness of the battery terminals • Check condition of rings (condition and positioning) and exchange them if damaged or broken • Check 'wear and tear' indicator of the telescope feet; to be replaced if indicator not visible
Every 500 hours	25 26	Motor: see manufacturer's manual • Change the oil of the wheel reducers • Fill up: capacity 4 x 0.7 l for 4x4 • Ring screws: check tightness and tighten if necessary If using organic hydraulic oil, change the oil in the tank.
Every 1000 hrs or every year	27	Motor: see manufacturer's manual • oil change: hydraulic oil tank
Every 2000 hours	29 30 31	Motor: see manufacturer's manual • Oil change: whole hydraulic oil tank and circuit • Oil change and cleaning of the diesel tank • Grease: rotation reducers: 1 point
Every 3000 hours	32	• Check: - condition of telescoping friction pads - condition of electric cables, hydraulic hoses, etc.

REMINDER: All these periodicities must be reduced if working in difficult conditions. (Consult After-Sales if necessary.)

5.3.2 - Tightening torque table



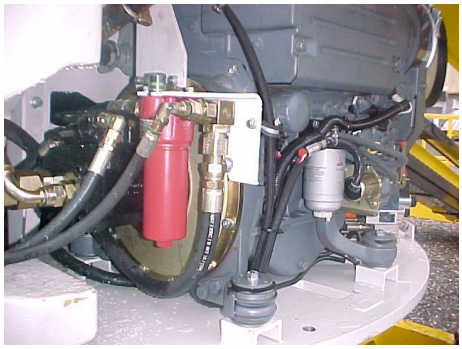
5.3.3 - Instructions

IMPORTANT:

- Only use the lubricants recommended in the table in (Chap 5.2.1 -, “Consumables”, page 42) for filling up and greasing operations
- Collect old oil to prevent environmental pollution.

5.3.3.1 - Hydraulic oil filter

Photo 15:Oil filter



Filter with a clogging indicator

- change the cartridge if the clogging indicator is visible.

NB: Check for clogging when the machine is hot. The indicator may be visible when cold due to oil viscosity.

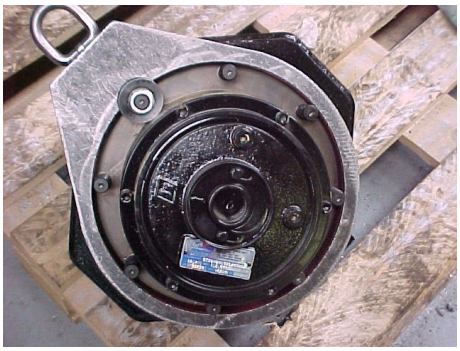
- unscrew the base nut and remove the cartridge
- screw a new cartridge into place.

Caution!

Before disassembling, make sure that the oil circuit is no longer pressurised and that oil temperature is not too high.

5.3.3.2 - Drive wheel reducers

Photo 16:Reducers



The wheel must be disassembled to check the reducers and change the oil. Immobilise the machine and lift it using a jack or hoist .

Make sure that the machine is properly secured and that the lifting equipment is of sufficient capacity and in good condition

- Level check:
  - turn the wheel so that 1 cap is on a horizontal line and 1 cap is on a vertical line.
  - unscrew the cap and check the fluid level which should reach the hole, add more if necessary.
  - screw the cap back on.
- Oil change:
  - In the same position, unscrew both caps and let the oil drain out.
  - Fill as described above.
  - Screw the caps back on.

5.3.3.3 -Slew ring

After dismantling the slew ring (ref 19 on the maintenance diagram), grease the external teeth using a brush. Use the consumables listed in (Chap 5.2.1 -, “Consumables”, page 42).

5.3.4 - List of consumables

- Hydraulic filter cartridge
- Air filter element
- Diesel pre-filter
- Diesel filter - motor oil filter

6 - OPERATING INCIDENTS

REMINDER: If the operation and maintenance instructions for the machine are respected, most incidents will be avoided. However, certain incidents may occur, and before any intervention, it is essential to check the table below. If the incident is listed, just follow the instructions.

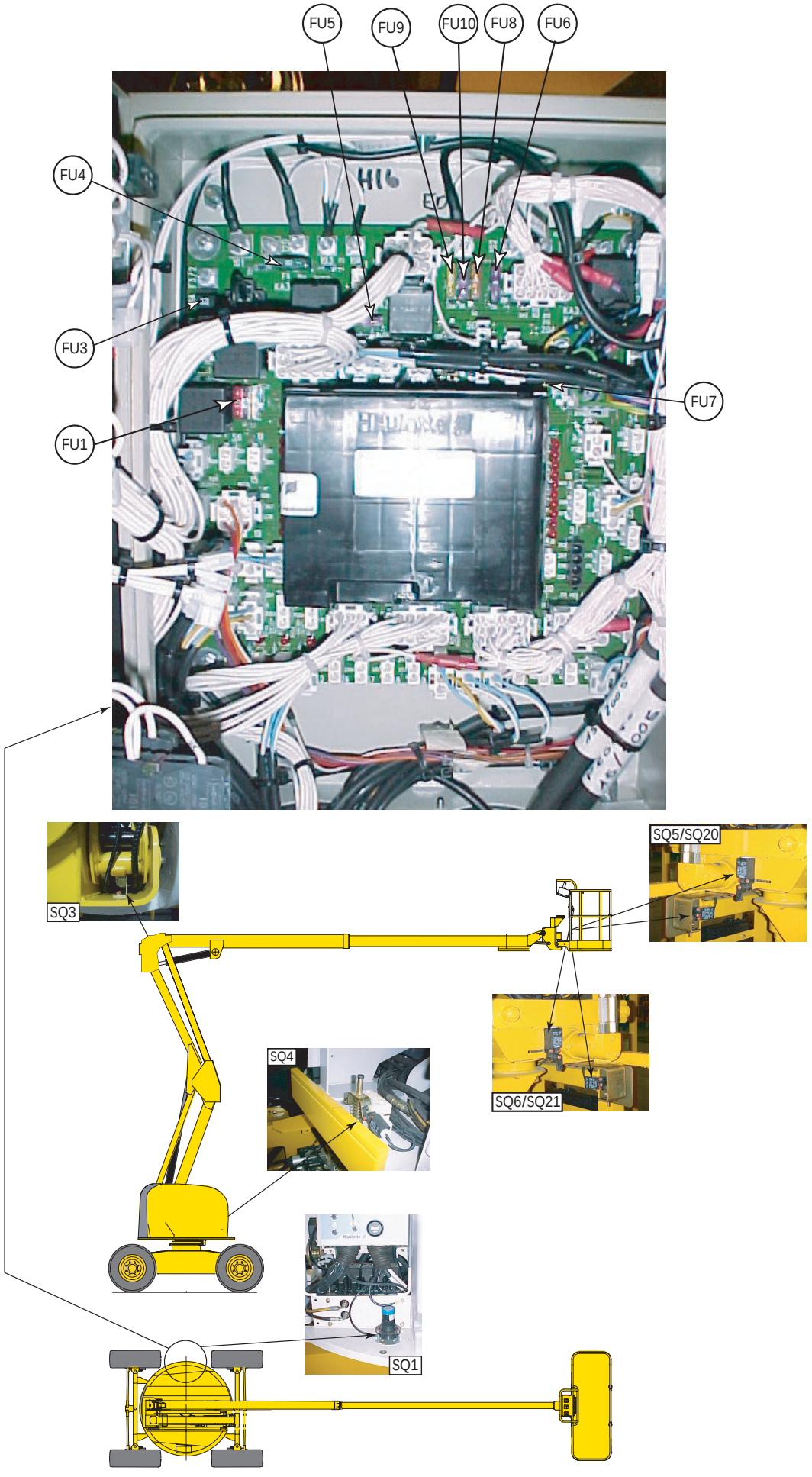
If it is not listed, consult your PINGUELY-HAULOTTE agent or the After-Sales department.

Before diagnosing a failure, check that:

- the fuel tank is not empty
- the batteries are correctly charged
- the turntable and platform emergency stop "palm buttons" are unlocked

INCIDENT	PROBABLE CAUSE	SOLUTION
Motor does not start up, or stops	• Diesel tank empty. • Electric batteries discharged. • Defective fuse on printed circuit (in the electric box) • "Palm button" pushed in • Motor in "safety mode": oil pressure, overheating, alternator charge • Load LED bulb blown. • Air filter clogging LED on. • Motor safety relay defective. • Loose contact between battery cables and terminals.	• Fill the tank. • Recharge the batteries. • Replace the defective fuse. • Reset. • See Manufacturer's manual or contact After-Sales. • Change the bulb. • Change the cartridge. • Replace the relay. • Unscrew the terminals and clean them.
Insufficient pressure or power at the pump	• Air filter clogged. • Motor regime too low. • Oil leak on a connector, hose, hydraulic component. • Clogged oil filter.	• Change the filter. • Adjust speed (see After-Sales) • Repair or replace (see After-Sales) • Replace hydraulic oil filter cartridge
No platform movement (no buzzer)	• Turntable key selection switch in the wrong position. • "Fail-safe" safety system not activated • Manipulator operating fault • Fault on the electrovalve of the required movement • Insufficient hydraulic oil	• Put in the platform position • Press the "fail-safe" contact and maintain pressure during movement • Replace the manipulator (see After-Sales) • Replace the electrovalve or its coil • Fill up
No platform movement (buzzer)	• Platform overload • Tilt too great	• Remove load • Retract the telescope, lower the boom and restore acceptable tilt to reset
No high speed	• Platform slightly extended	• Lower the boom totally
No steering movement	• Insufficient hydraulic oil	• Fill up
The turntable does not turn	• The blocking pin is engaged in the chassis	• Remove the pin
Noisy hydraulic pump	• Insufficient oil in the tank	• Fill up
Cavitation of the hydraulic pump	• Oil viscosity too high.	• Empty the circuit and refill with the recommended oil

INCIDENT	PROBABLE CAUSE	SOLUTION
No adhesion on one drive wheel	• Insufficient load on one wheel	• Act on the differential blocking switch
Buzzer sounding	• Slope or tilt > authorised limit • Platform load close to cut off • Hydraulic oil temperature too high	• Reset by retracting the telescope and lowering the boom • Remove load • Leave to cool
Electropump does not work	• Battery main switch open • Defective fuses • Defective or discharged batteries • Battery cables do not make contact	• Close the battery main switch • Replace the fuses • Replace or recharge the batteries • Clean and tighten the terminals


FU5
FU9
FU10
FU8
FU6
FU4
FU3
FU7
FU1
SQ3
SQ5/SQ20
SQ4
SQ6/SQ21
SQ1

7 - SAFETY SYSTEMS

7.1 - MACHINE ELEMENTS

7.1.1 - Motor

G2	Alternator
M3	Starter
YA2	Accelerator
YA1	Motor stop

7.1.2 - Supplies and fuses

FU1	10A Motor stop
FU3	80A Accelerator
FU4	30A +Main
FU5	3A 212 +Turntable
FU6	3A 211 +Platform
FU7	20A 201 +Electrovalves
FU8	5A 242 +Permanent
FU9	20A +Accessory
FU10	3A Valve LS
FU11	250A Motorpump 1
FU13	250A Cooling system

7.1.3 - Inputs

7.1.3.1 -Control inputs:

SA2	Accelerator
SA3	Differential blocking
SA4	Platform basket rotation
SA5	Platform compensation
SA8	Turntable telescope
SA9	Platform telescope
SA11	LS MS HS
SA12	Forward steering
SB3	Turntable ignition
SB4	Platform ignition
SB5	Buzzer
SA13	Turntable lifting
SA14	Turntable lifting
SA15	Turntable slewing
SM31	Slewing and lifting
SM2	Lifting
SM4	Travel

7.1.3.2 -Safety system inputs:

SQ6	weighing
SQ5	weighing
SQ1	Tilt
SQ3	Boom raised
SQ4	Arm raised
SQ20	Basket rotation
SQ21	Basket rotation
B4	Oil tank temperature
B3	Motor oil pressure
B2	Motor oil temperature
B1	Filter clogged
D+	Alternator
W	Ignition disabler

7.1.4 - Outputs

7.1.4.1 -Relays

KP1	Motor stop
KT2	Accelerator
KA2	Ignition

7.1.4.2 -Logic electrovalves CAUTION OUTPUTS INVERTED

YV1	LS
YV2a	LOGIC PVG
YV2b	LOGIC PVG
YV8	HS
YV9	DIfferential blocking
YV10	MS HS
YV12	MS HS
YV13	Differential blocking
YV14a	Telescope retracted
YV14b	Telescope extended
YV15a	Compensation up
YV15b	Compensation down
YV19a	Left basket rotation
YV19b	Right basket rotation
YV21a	Rear left steering in 4*4
YV21b	Rear right steering in 4*4

7.1.4.3 -Proportional electrovalves (3v 6v 9v if 12v supply)

YV3	Lifting
YV4	Lifting
YV5	Slewing
YV6	Travel
YV7	Travel

7.1.4.4 -Buzzers

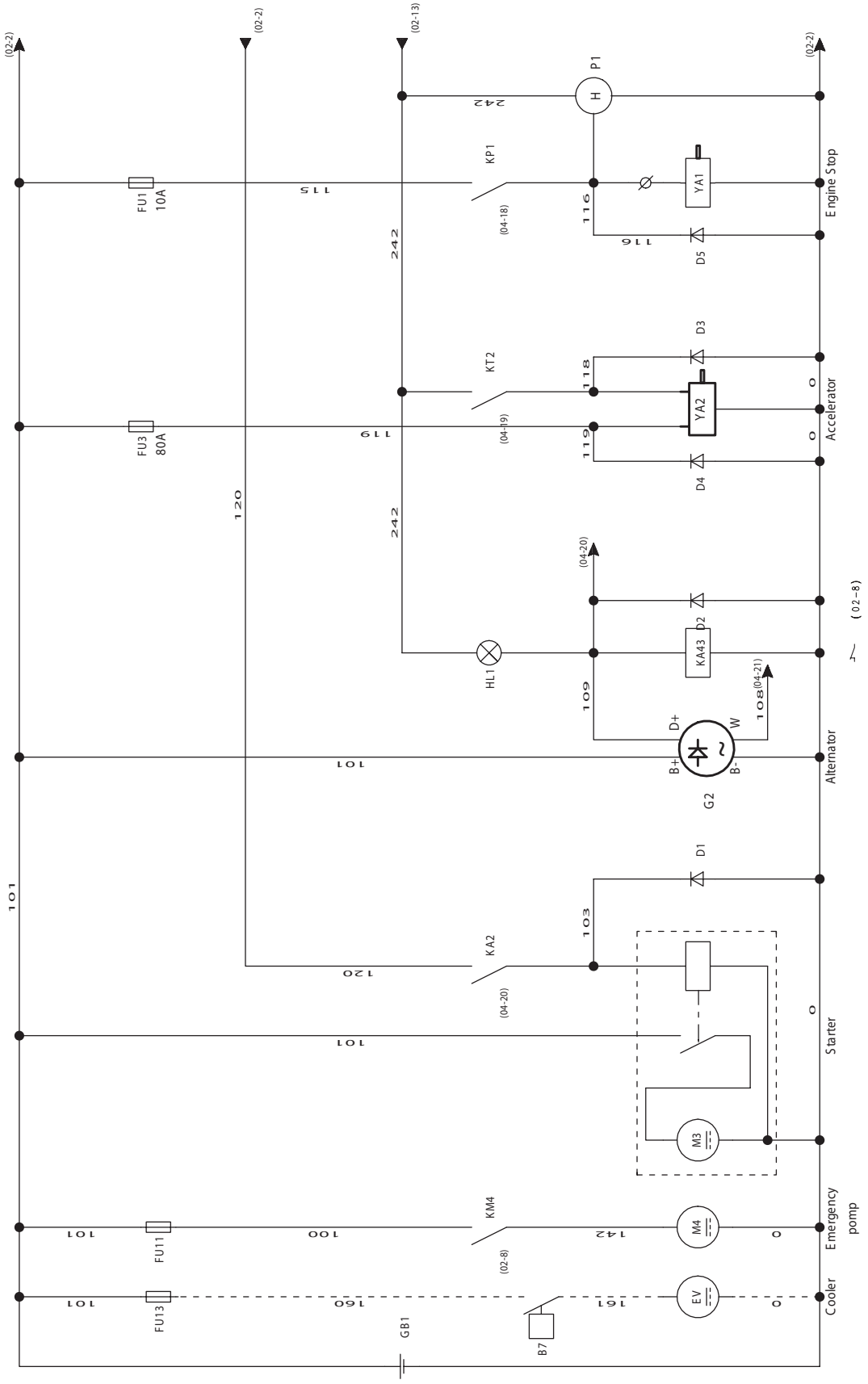
HA1	**Horn (260-261)**
HA4	**Tilt, overload, temperature buzzer**
HA2	**overload buzzer**

7.1.4.5 -LEDs

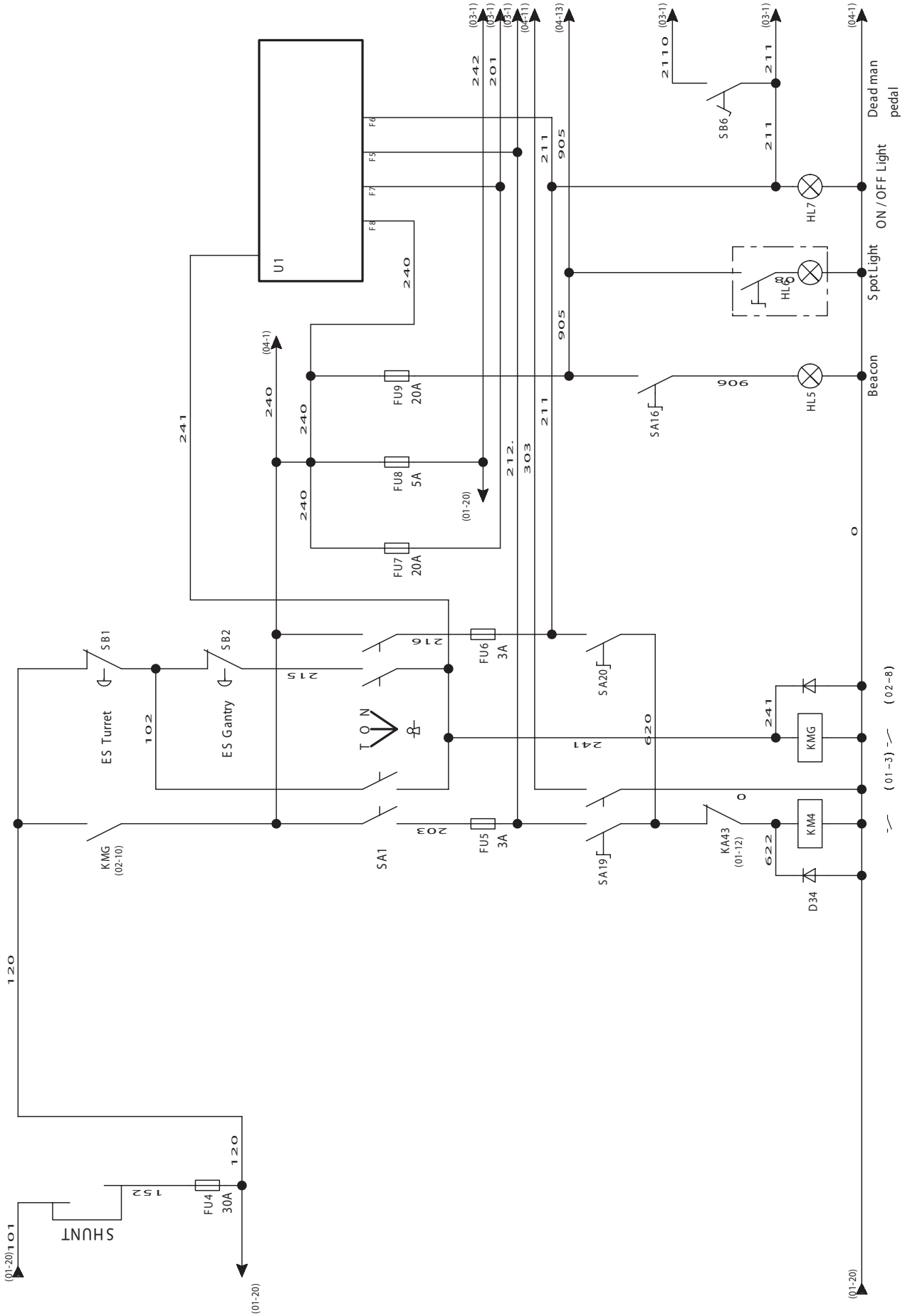
HL1	**Battery charge**
HL2	**Air filter**
HL3	**Motor oil temperature**
HL4	**Motor oil pressure**
HL9	**Fault LED**
HL13	**weighing**

8 - WIRING DIAGRAMS

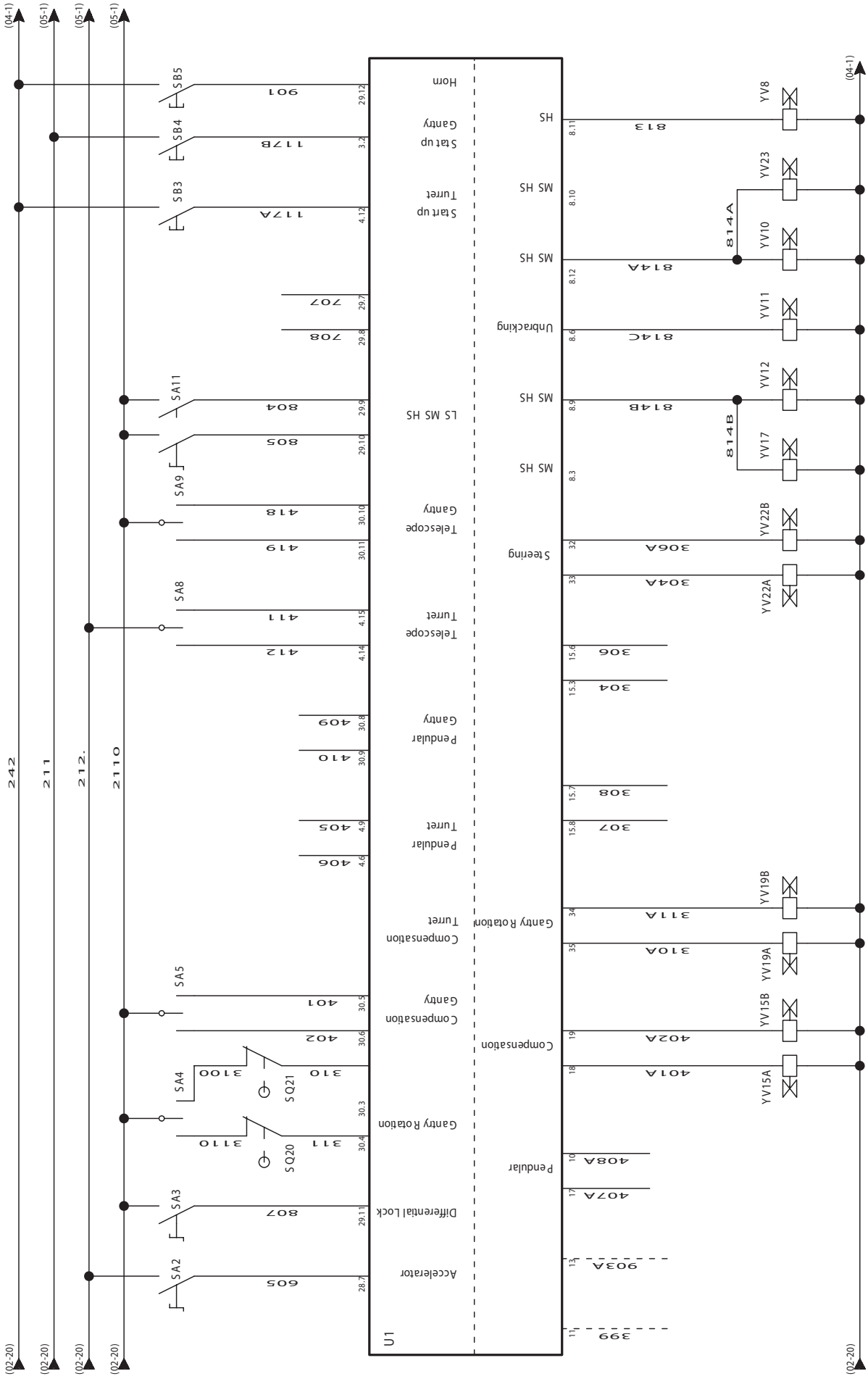
8.1 - DIAGRAM 137P270910 - FOLIO 01/05



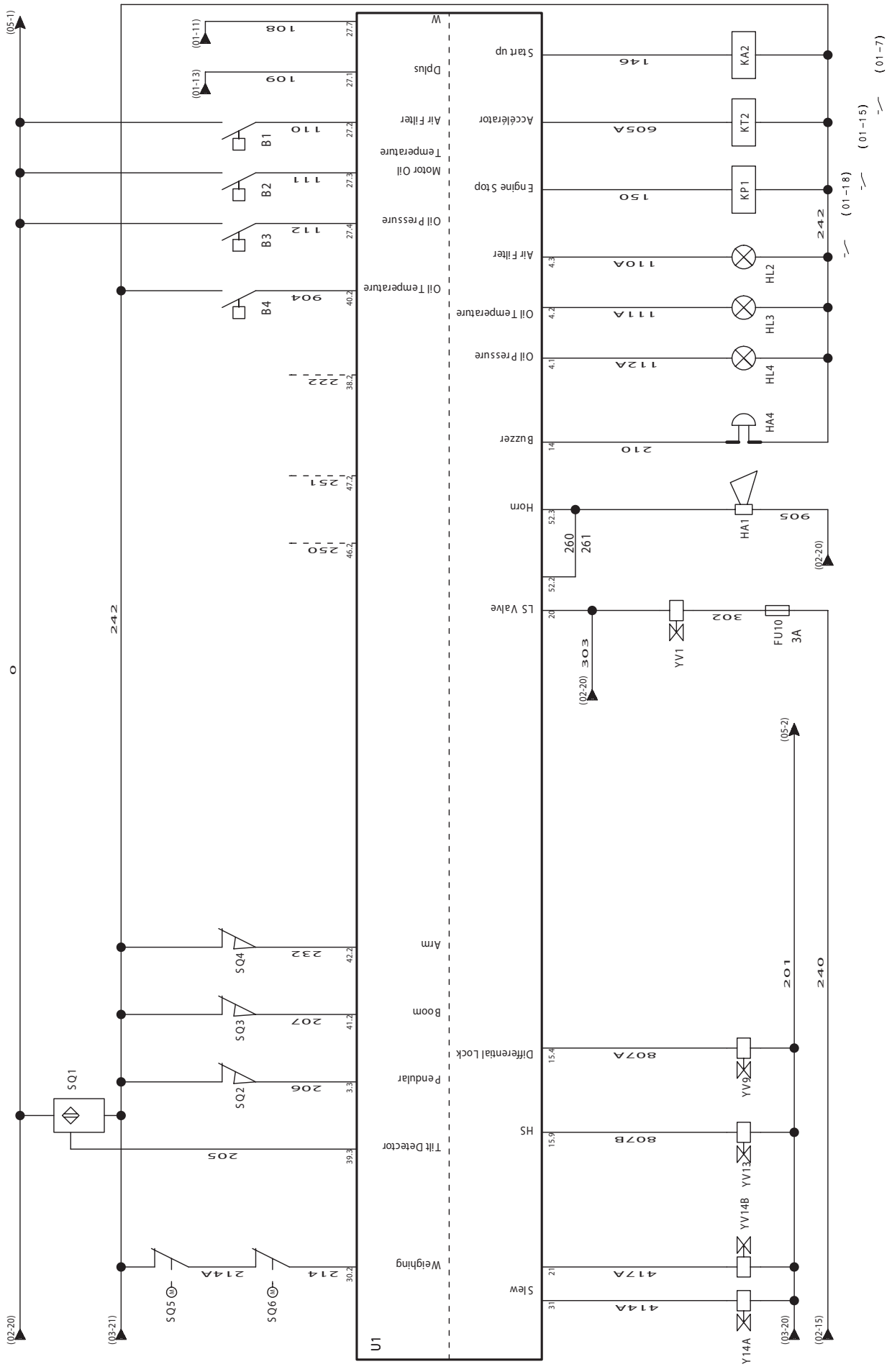
8.2 - DIAGRAM 137P270910 - FOLIO 02/05



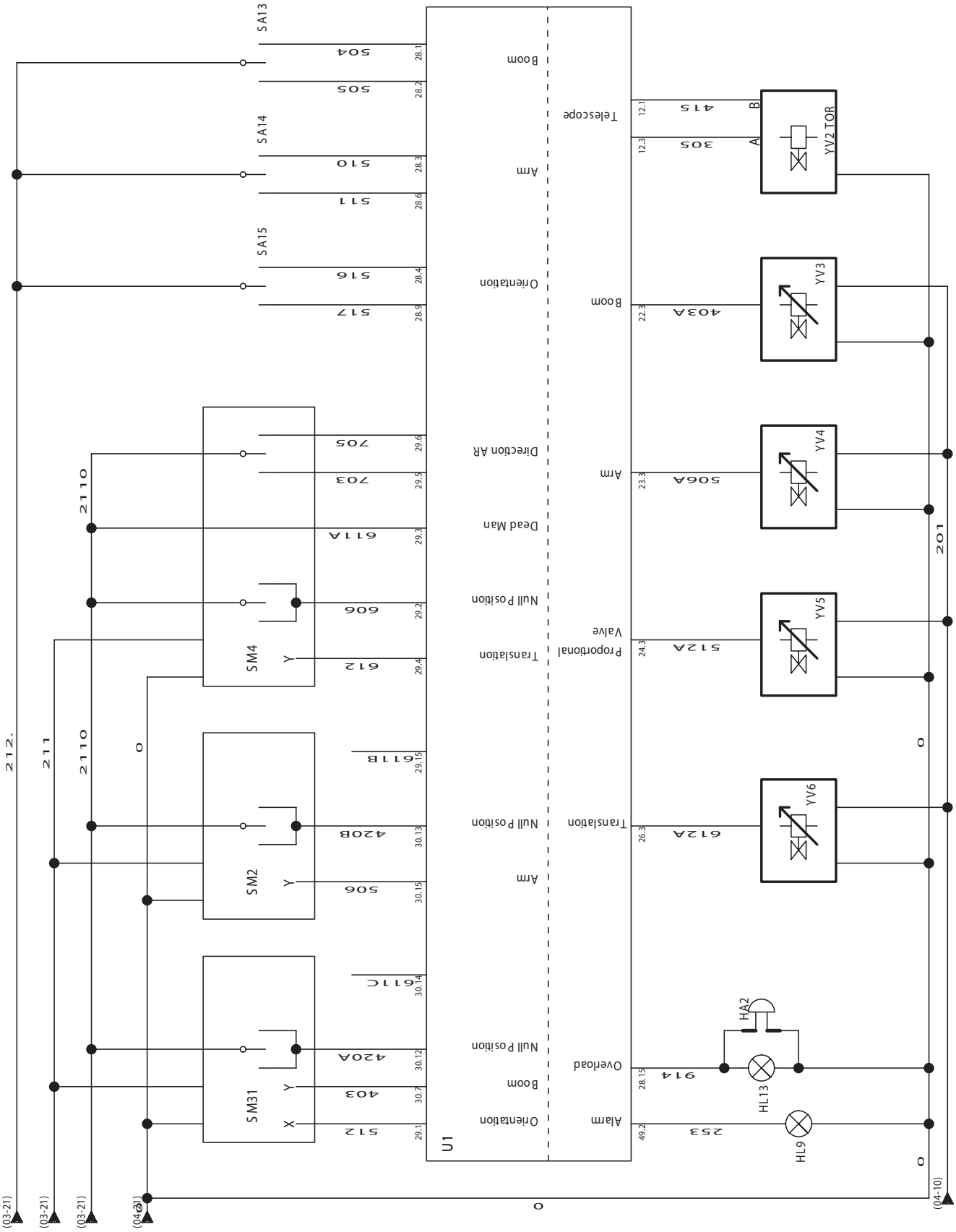
8.3 - DIAGRAM 137P270910 - FOLIO 03/05



8.4 - DIAGRAM 137P270910 - FOLIO 04/05



8.5 - DIAGRAM 137P270910 - FOLIO 05/05



9 - HYDRAULIC DIAGRAMS

9.1 - DIAGRAM HA16X REFERENCE